# The NEW ZEALAND JOURNAL OF AGRICULTURE

Vol. 63 WELLINGTON, OCTOBER 15, 1941. No. 4



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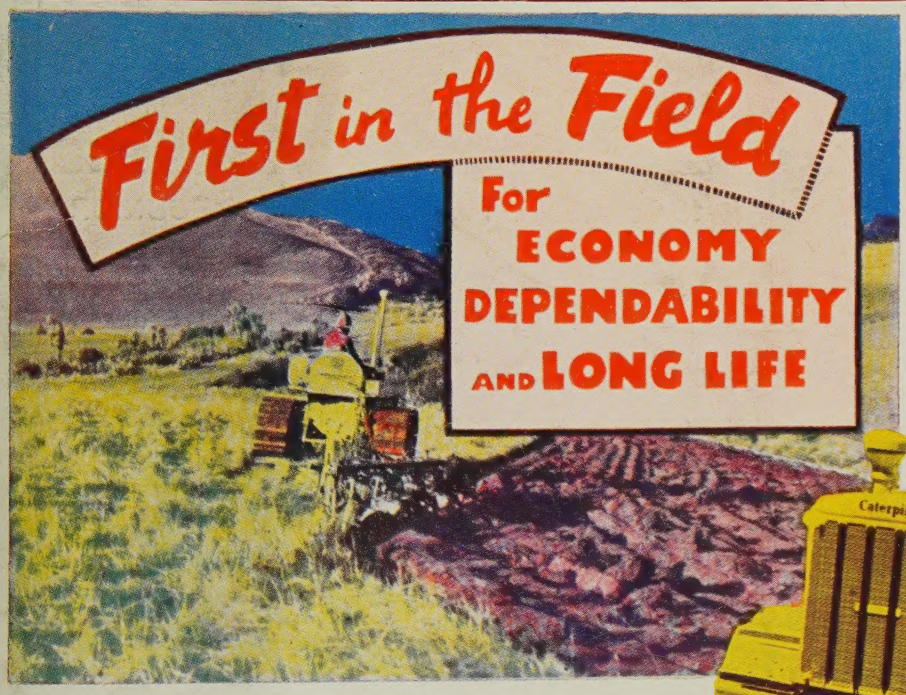

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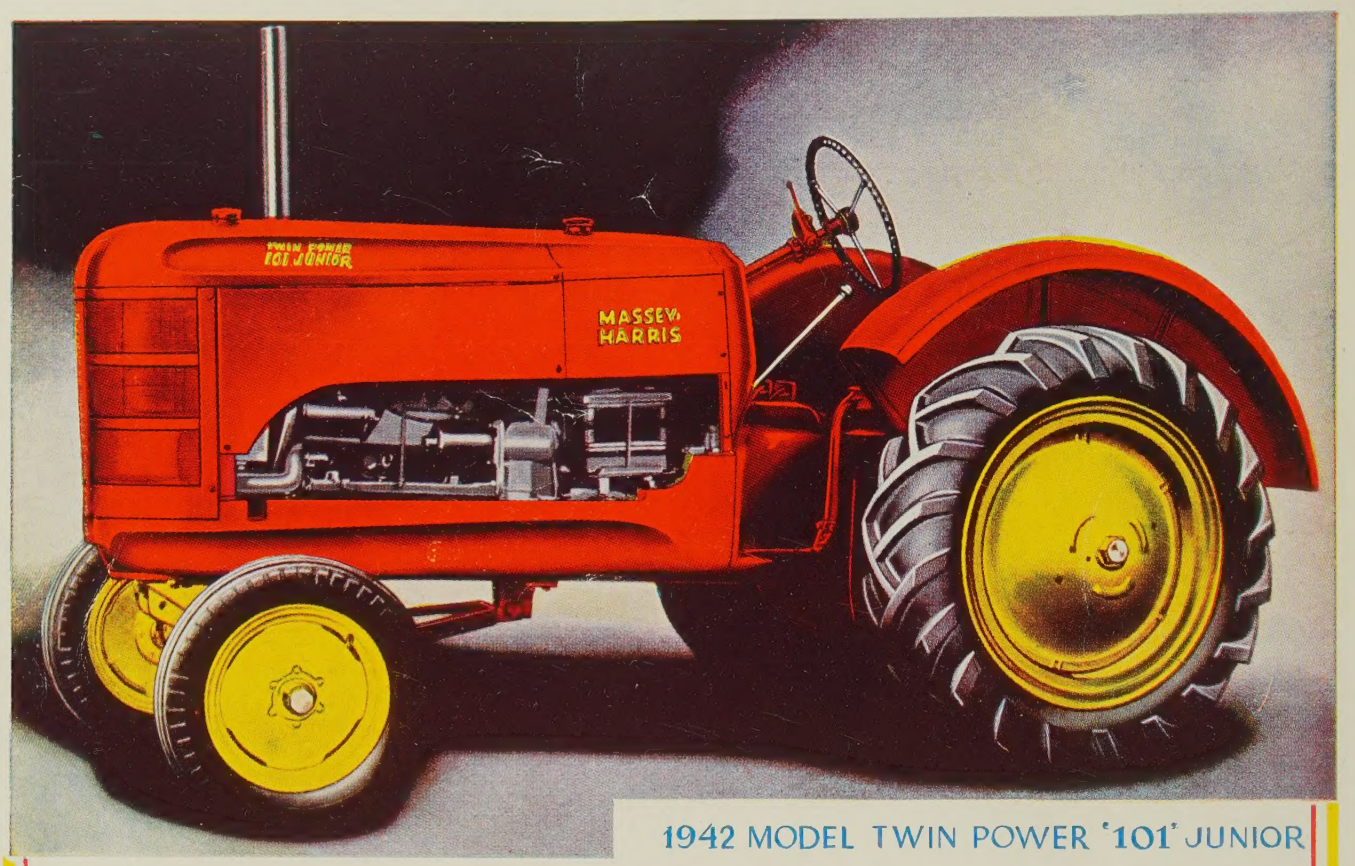


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We also stock a complete line of tractors ranging from 14 to 95 h.p., both Crawler and Wheel type. Petrol, Kerosene or Diesel.

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THE NEW ZEALAND
# JOURNAL OF AGRICULTURE

Vol. 63. No. 4.
October 15, 1941.
Wellington.

Published by direction of Hon. J. G. Barclay, Minister of Agriculture.

*New Zealand has been asked to help in relieving the acute shortage of grass and clover seeds in Great Britain. This Dominion has the facilities to double her production of all lines (in some lines a greater increase is possible), and it rests with the farmers and seed merchants whether this call from the Mother Country is answered.*

# APPEAL FOR GRASS AND CLOVER SEEDS

By
R: B. TENNENT,
Director of the Fields Division, Wellington.

IT is true that New Zealand has, over a long period, been largely self-supporting in seeds of the major pasture plants. It is also true that, from time to time, New Zealand has exported considerable quantities of certain seeds as far abroad as Great Britain. But the position today is unique. We still need to be self-supporting in our own seed requirements. At the same time, Great Britain has been embarked for two years now on a policy of "Speed the Plough." It is a simple matter to forecast that this policy must be followed in the very near future by a policy of pasture re-establishment, for pasture farming and cropping have a definite correlation the one with the other.

This, in turn, will call for the supply of greater quantities of grass and clover seeds than have ever before been used in Britain, but the British farmer, concentrating for his very life on the production of foodstuffs, must necessarily neglect the production of the still essential materials for the re-grassing of areas broken up for cropping purposes. This is where the far-flung Dominions—New Zealand not the least—can render true assistance to the Mother Country.

## *Factors in Our Favour*

We claim to be ideally situated for the production of such seeds. What are these claims worth?

Firstly, our climatic conditions generally are ideal for the production of seed of high germination and of good sample and appearance.

Secondly, our farmers are experienced in the production of such seeds, and with the employment of modern machinery can reap the harvest with the lowest expenditure of man-power and finance.

Thirdly, for the more important pasture seeds, we have been developing in this country strains of outstanding merit which can be expected to give equal results in the comparable climate of Great Britain.

What more is required in order to ensure adequate seed supplies? The other requirement is a willing band of farmers prepared to do their utmost this coming season to increase seed production.

Great Britain has asked to be supplied with increased quantities of grass and clover seeds—cocksfoot, white clover, Italian and perennial ryegrass in particular, but other seeds also—and the appeal is made to the farming community to leave no stone unturned, no seed unharvested, in an effort to meet this call.

In the past, the harvest of herbage seeds has been looked upon by the farmer to a large extent as a matter

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are the real answer to increasing the vital productive power of your land . . .
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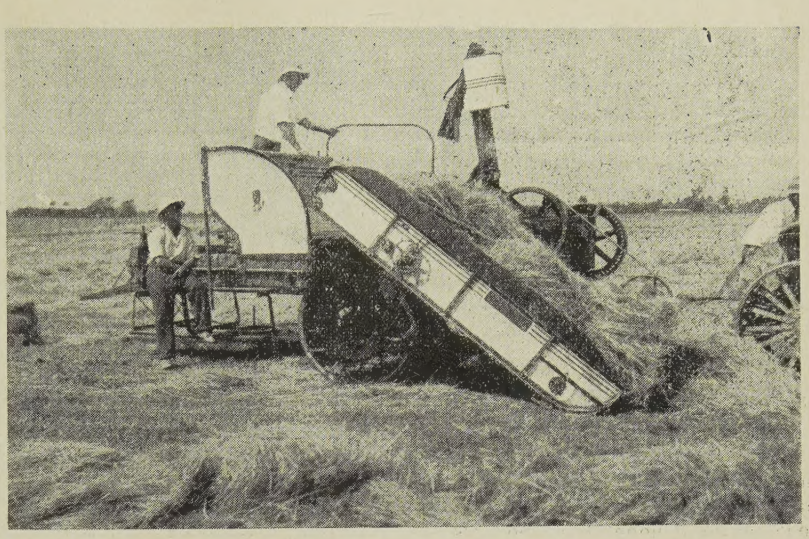
of what the season will produce. As with all Nature, however, man can adapt her to his needs, and a little time and thought in this direction are well repaid.

The harvest must not be approached as if it were an after-thought, but with the real aim to produce seed in increased quantities. Give the pasture intended for seed production care comparable to that which is bestowed on a flock of ewes or a herd of dairy cattle. The results which will be shown in the seed crop will be no less astonishing. Certain plants are fairly exacting in their requirements before good seed crops can be expected, while others thrive under a wide range of conditions, so that ample scope exists for the farmer to grapple with this task in a manner most fitting to the existing conditions.



"The employment of modern machinery can reap the harvest with the lowest expenditure in man-power and finance."

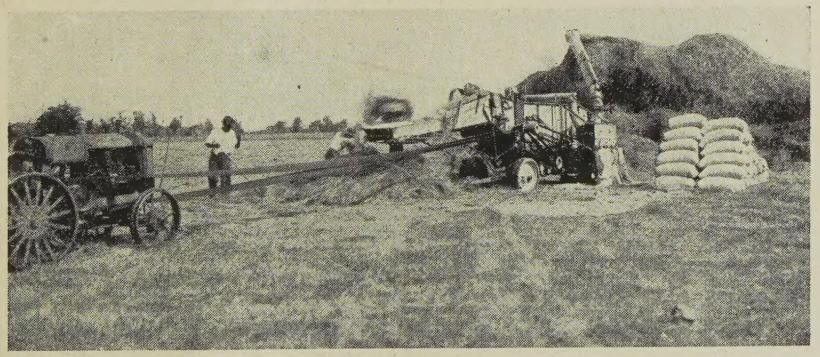
[*H. Drake, photo.*

## *Perennial Ryegrass*

Perennial ryegrass, for instance, can be produced under a wide range of conditions, although perhaps giving best results in Canterbury, Marlborough, Central and North Otago, Hawke's Bay, and Poverty Bay. It requires no elaborate treatment; a dominant perennial ryegrass sward closed up at the correct time and the adoption of up-to-date methods of harvesting are the essentials for success. Pastures of a mixed ryegrass-content—perennial and Italian—should be avoided if possible. Every endeavour should be made to produce seed from areas sown with certified seed, and to have the produce certified also.

## *Italian Ryegrass*

As with perennial ryegrass, Italian ryegrass seed production can be carried out under varied conditions. As this pasture plant is more in the nature of an annual, however, seed production is undertaken almost entirely in the arable cropping districts. Here again, pastures of mixed Italian and perennial ryegrass should not be harvested for seed, and preference should be given to those areas sown with certified seed.



Threshing grass seed by means of the "tin-mill."

[*H. Drake, photo.*

## *Cocksfoot*

In comparison with the foregoing species, cocksfoot is very particular in regard to the conditions necessary for ideal seed production. Cocksfoot seed is at all times liable to be low in purity due to the presence of considerable proportions of empty husks, while the presence of ryegrass seeds in appreciable quantity detracts materially from the value of the sample. Cocksfoot areas for seed production are established solely with that view, so that a rapid extension cannot be expected. This is unfortunate, as the prime need of Great Britain is for cocksfoot, but much can be done to see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that existing stands produce to their maximum capacity.

In the past, the Akaroa Peninsula has produced large quantities of cocksfoot seed, but these activities are extending more and more to the Plains, particularly in Mid-Canterbury, where lower harvesting costs and higher seed purity assist in enabling cocksfoot seed to be marketed at world parity. Wherever possible, certified seed should be produced, as this type of cocksfoot has already established a reputation in many countries.

### *Browntop*

Browntop seed production is not carried out on pastures sown specifically for seed production, but, probably more so than any other pasture seed, is an incidental in the normal farming programme. The seed is usually harvested on the typical browntop areas of Otago and Southland and along the foothills of Canterbury. While, under present management conditions, little can be done to increase the yield of browntop seed, care in the stripping and harvesting of every available acre will go far to increase the total production of this seed.

**The hall-mark of quality. A sack of seed receiving the official certification seal.**
[*H. Drake, photo.*

### *White Clover*

The harvesting of white clover seed may be undertaken as a straight seed crop from white clover-dominant pastures, or it may be produced in appreciable quantities in association with perennial ryegrass seed. Canterbury produces much of the white clover seed harvested, although considerable quantities are also produced in other districts which are subject to


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reasonably dry summer and autumn conditions, which are essential to a good clover harvest. New Zealand has evolved a type of white clover of outstanding merit, and all seed produced should be offered for certification with a view to identifying this superior type. Management of white clover areas plays a large part in the production of successful seed crops.

### *Red Clover*

There are two distinct types of red clover seed produced in New Zealand. One is the broad red clover—an early type which finds a useful place in temporary leys and as a hay-producer—and the other is the Montgomery red clover, which is used more in permanent mixtures and as a constituent of grazing pastures. While the broad red clover is more generally used in this country, Montgomery red clover is rapidly coming into prominence. As a seed-producing proposition, however, the Montgomery type deserves every consideration because of the high place already won for this clover in British pasture mixtures. Everything points to the possibility of an excellent export trade developing for this seed when saturation point is reached in New Zealand's requirements.

### *Other Grass and Clover Seeds*

The production of other grass and clover sedes—Chewings fescue, alsyke, timothy, etc.—is also undertaken locally. But the above remarks emphasise the seeds most urgently required by Great Britain.

An article in the September issue of the "Journal of Agriculture" entitled "Clean Seed Production in Otago" gives further information on pasture management for seed production, while farmers desiring more detailed information on seed production methods will find their local Instructor in Agriculture able and willing to give much valuable advice.

### *Conclusion*

In conclusion, it is desired to reiterate—

(a) The urge to produce greater quantities of grass and clover seed to meet the needs of Great Britain.

(b) The desirability of producing as great a proportion of seed as possible from areas composed of superior strains of pasture plants.

(b) The desirability of producing as production as a definite project and not as an incidental in the farming programme.

## Radio Broadcasts

RADIO broadcasts to farmers will be given from 1YA Auckland at 7.15 p.m. on the following dates:—

November 3.—Subject to be selected: Mr. P. W. Smallfield, Superintendent, Animal Research Station, Ruakura.

November 10.—"The Better Utilisation of Farmyard Manure": Mr. E. H. Arnold, Instructor in Agriculture, Dargaville.

November 17.—"Hay and Silage": Mr. P. S. Syme, Instructor in Agriculture, Warkworth.

The broadcast on November 17 concludes "The Man on the Land" sessions from 1YA, Auckland, until March, 1942.

**PIG INDUSTRY BROADCASTS.**

The following programme of radio broadcasts for farmers will be given during November under the auspices of the National Pig Industry Council:—

1YA, November 20, 7.15 p.m.—Questionnaire covering problems of the pig farmer: Mr. A. Longwill, Auckland District Pig Council.

2YA, November 11, 7.15 p.m.—"Housing of Pigs": Mr. C. H. M. Sorensen, Taranaki District Pig Council.

3YA, November 20, 7.15 p.m.—Subject not decided: Mr. H. W. McIntosh, Canterbury District Pig Council.


LORD NELSON said

*"I owe all my success in life to always being half an hour ahead of time."*

**Although his half-hour then was sufficient anticipation, it wouldn't suffice to-day. That is, not if he wanted to be certain of purchasing quality necessities in New Zealand.**

**Every prospective purchaser of any commodity whatever must by now fully appreciate that stocks of most goods, especially leading lines, whether imported or manufactured here, are, to say the least, precarious.**

**To ensure getting delivery, one must do more than emulate Lord Nelson. To place an order for a popular seller to-day and expect delivery in half an hour would meet with about as much success as "a fan in hades."**

**Well, what we are getting at is this. In common with other manufacturers, we anticipated trouble in getting deliveries of Spring Steel and ordered our requirements not half an hour, or a week, or even six months, but years ahead. The result is that we now have stock. Unfortunately, we have had brief periods when we could not fill orders and unfortunately, or should we say fortunately, we have had a constant stream of orders. No, we have always had a stream of orders, lately we have had a deluge and the result is we are behind with our deliveries.**

**Gradually we will catch up—but as in fairness to all we must of necessity fill orders in the sequence in which they are received, you will appreciate the expediency of placing your order now.**

**As everybody now realises the outstanding advantages of the Bevin Harrow, it is unnecessary for us to go into details of its many merits. We will mention, however, that we can guarantee that any farmer who appreciates that fertilisation by cultivation will to a large extent compensate for the "cut" in artificials and who uses the "Bevin" during dry spells throughout the summer will ensure for himself the highest possible production.**

**The reason for this and for many other benefits you'll get from the "Bevin" are contained in our fully illustrated Catalogue. Even should you contemplate delaying your purchase until, say, February or March, we emphatically urge that you send in the attached Coupon now, so that you can follow the example of Lord Nelson and anticipate the future.**

**To A. S. BEVIN, Dept. J.,**
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I am interested in the "Bevin" Harrow. Send me your illustrated Catalogue, etc., together with a copy of your **written money-back guarantee.**

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# THE Director-General's PAGE

## Produce More Grass and Clover Seed

GREAT BRITAIN has asked for increased quantities of grass and clover seeds. In a recent communication from London it was indicated that New Zealand could increase her production of all lines by at least 100 per cent. and of some lines up to 500 per cent. to meet the demands of the British market. British experts are certain that in the coming season in that country there will be a largely increased and sustained demand for all pasture seeds.

The position regarding supplies of these seeds in England is already acute, and if we in New Zealand are to help in this matter it is essential that prompt consideration be given, by seed merchant and farmer alike, to the possibility of greatly-increased production in the immediately forthcoming season. The time available for preparation is short, and Britain must have herbage seeds to regrass the areas which have been put under crop. It remains entirely a matter for the man associated with seed production to determine not only his attitude, but his actions, regarding this appeal from the Mother Country.

## Growing of Medicinal Plants

UNDER direction from the War Cabinet, the Department of Agriculture has made a contract with the Hastings Borough Council and certain private farmers for the growing of medicinal plants which are required by the United Kingdom Government. The total area allotted to this scheme is 26 acres. Of this area, 20 acres will be sown in *Digitalis purpurea* (foxglove), 2 acres in *Datura stramonium* (thorn apple), 2 acres in *Atropa belladonna* (deadly-night-shade), and 2 acres in *Hyoscyamus niger* (henbane). The growers will be responsible for the pricking out into the necessary beds and the planting out into the field of the plants, the care and maintenance of the area, and the harvesting and delivery of the material to the drying and docking plants. The drying, packing, and marketing of the material will be undertaken by the Marketing Department.

## Bacon Order Increased

AN increase in the British order for baconers has been received by the New Zealand Government.

The Ministry is now offering to purchase for the third year of the war a total of 11,000 tons of baconers from New Zealand. This quantity is inclusive of the original order of 5,000 tons. There are certain conditions attached to the acceptance of this order, and negotiations are still proceeding. When finality is reached a full public statement will be made for the further information of the industry.

In the circumstances, the Marketing Department will continue purchasing for export beyond November 30 for the time being.

See how to produce better baconers on whey

TURN TO PAGE 302

NECADOK DOCKING FLUID is

ANTISEPTIC, HEALING AND ASTRINGENT

It checks bleeding and promotes healthy and rapid healing.

NECADOK IS NOT WASHED OFF BY RAIN AND IS RECOMMENDED FOR ALL STOCK WOUNDS.

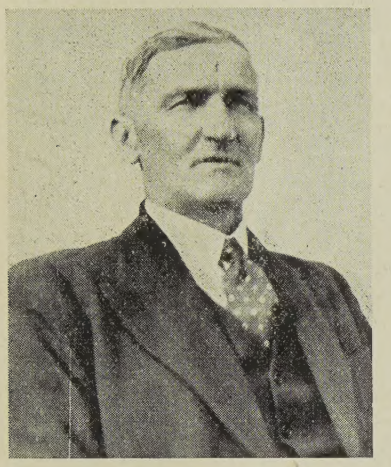
1-gal. tins 26/-; ½-gal. tins 15/6; ¼-gal. tins 8/6; pint tins 4/6.
(1 Gallon will dock 1000 lambs).

Agents in N.Z.: All Branches of the Farmers' Co-op. Companies and Associations. In Hawke's Bay obtainable from Williams & Kettle Ltd.

— ASK YOUR MERCHANT TO OBTAIN FOR YOU —

## Retirement of Mr. C. S. Dalgliesh

FOLLOWING 40 years' service with the Department of Agriculture, Mr. C. S. Dalgliesh, Fields Instructor at Rotorua, retired recently. During this extended period Mr. Dalgliesh has filled numerous positions with credit both to the Department and himself. He was one of the original staff of the Agricultural Instructional Service, and for about 12 years held the position of Fields Instructor on the West Coast



Mr. C. S. Dalgliesh.

of the South Island, where his excellent work under difficult farming conditions will long stand as a monument to his diligent advocacy of the principles of good farm husbandry.

Early in 1929 Mr. Dalgliesh was transferred as Fields Instructor at Rotorua. He was closely connected with the breaking in of the pumice soils of the Rotorua district, and the whole of the farming community of that territory must feel indebted to him for his clear-sighted guidance in helping to farm what was once considered to be the "problem child" of New Zealand soils.

On his retirement, Mr. Dalgliesh was presented, at a gathering of Departmental officers and officers of kindred Departments at Rotorua, with a chiming clock as a mark of the esteem in which he is held by his fellow officers of the Department of Agriculture.

## Rabbit Control Subsidy Scheme

THE Minister of Labour has agreed to re-introduce the subsidy scheme for rabbit destruction work which was in operation last spring and summer. The subsidy on wages is on a liberal basis, that is, £3.10.0 per man per week for a registered unemployed, and £3.0.0 per man per week if not registered but specially enrolled for the purpose.

The operation of the scheme will be administered by officers of the Department of Agriculture (Livestock Division) in co-operation with officers of the Employment Division of the National Service Department. Application for participation in the subsidy scheme should in the first instance be made to the local Inspector of the Livestock Division.

The purpose of the scheme is to give every facility for the work of rabbit destruction to be carried on throughout the spring and summer months, following the winter kill, in order that the new season's crop of rabbits may not have the opportunity of increasing or maintaining the rabbit population of the Dominion. While the high price which rabbit skins reach during the winter months does, for the time being, bring about an increased kill, it has the tendency to stay further effort, with the result that the breeding season quickly restores the pest's population. The scarcity of labour because of the war is, of course, likely to accentuate that position, and the introduction of the subsidy scheme whereby all available suitable labour when not required for farm work can be concentrated on rabbit work is designed to prevent that happening.

The subsidy scheme will be available to rabbit boards, county councils, committees of farmers, or, where no committees can for good reason be formed, to individual farmers, but it should be quite clear that the essence of its adoption implies the prosecution of an energetic "killer" policy, and this aspect of the scheme will be made of paramount importance. With the introduction of this scheme of liberal assistance, any slackness of effort in the destruction of rabbits during the next few months will bring the defaulters under the penalty provisions of the Rabbit Nuisance Act.

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Pure fur felt; snap brim shapes. Choice Blues, Greys, Browns, Fawns, and Greens. Medium and narrow brims; the smart low crown.

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## MAKES
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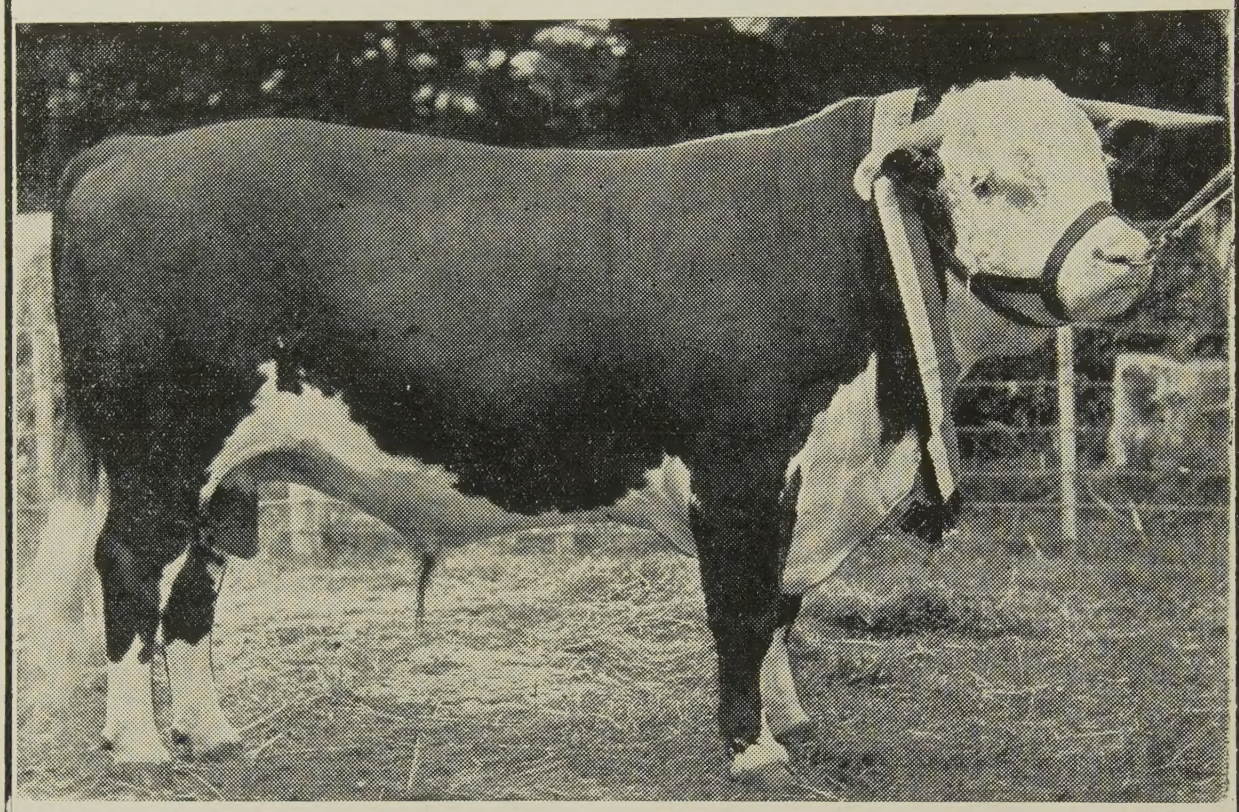

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# Electric Power from Small Streams

*Because of their distance from power lines, many farms are unable to enjoy the benefits of electrical power supply. On the other hand, such farms are often endowed with streams which, if suitably harnessed, could supply this power for a comparatively small outlay. This article gives a full description of how a small electric power plant can be constructed on the farm.*

By

D. M. E. MERRY,
Instructor in Agriculture, Nelson.

NEW Zealand's main national hydro-electric stations have now a large and increasing rural load. In thinly settled districts, however, there is little immediate likelihood of reticulation from this source, and the internal combustion engine burning imported oil fuel or petrol is likely to remain for many years the mainstay for farm power. Fortunately, our country districts are often richly endowed with streams, which, if suitably harnessed, could at the flick of a switch supply light, heat, and energy for many farm and domestic needs.

How, then, might one gauge the suitability of a stream for this purpose? What power is likely to be available, and what is the likely initial cost and maintenance of the installation? Some information on these points, together with illustrations of successfully operating schemes in the Nelson district, are featured in this article.

## *Developing Stream Power*

Most farmers have sufficient ability to make at least the preliminary investigations so that the question may be settled—"Is a small electric power installation practicable on my property or not?" Later, if the work is to be carried out, the assistance of a competent electrical engineer will be indispensable, and a permit will be required from the Public Works Department. Permission must also be obtained from the local power board if the farm is in a power board area, and the county council if the lines are to be taken across a public roadway. Registration and a long-term licence obtainable from the Public Works Department cost £1 1s., with an annual rental of 2s. 6d. per kilowatt on the rated capacity, with a minimum fee of 5s. yearly. (1 kilowatt = 1000 watts, or approximately 1⅓ h.p.)

Before construction work is begun the first essential is to determine the power the stream is capable of developing. This can be found by measuring the volume of water passing a given point in a known time, together with the fall, or "head," available from the intake down to the power house. Necessarily, these measurements must be made at a period of minimum or normal flow; otherwise there will be likelihood of a power shortage in dry weather.

## *Measuring Water Volume*

The amount of water measured in cubic feet per minute passing in the stream can be computed as follows:—

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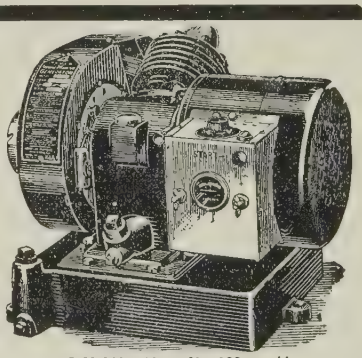
For delivering cream, etc., by river, the Johnson Sea Horse Outboard Motor is the most efficient, economical unit obtainable.



C.H.300, 12 volt, 300 watt.

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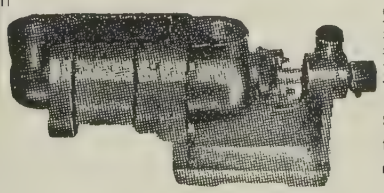

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### FLOAT METHOD.

Select a fairly uniform section where the velocity is low, and measure accurately the stream width and average depth (Fig. 1). Along the bank measure out a known length, say 20 ft. or more, and observe the time for a float to travel the measured distance. The best form of float is a weighted stick which will float free of obstruction and with only a few inches above water. At least three readings should be taken and the times averaged. The mean velocity is approximately one-fifth less than this average, due to the lag in the flow near the stream banks and bed. The discharge in cubic feet per minute equals four-fifths of the average velocity of the float (reckoned in feet per minute) multiplied by the average cross-sectional depth of the stream.

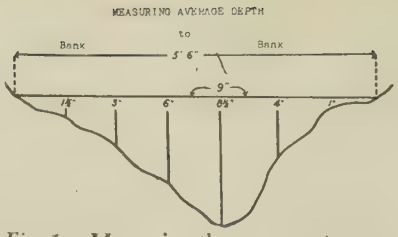



*Fig. 1.*—**Measuring the average stream depth.**

### EXAMPLE:—

Width of stream = 5ft. 6in.

Average of depths taken every 9 inches across width: 1½in., 3in., 6in., 8½in., 4in., 1in. = 4 in., or ⅓ft.

Rate of flow: Float takes average time of 5 seconds for 20 ft. $= \frac{60}{5} \times \frac{20}{1}$ = 240 ft. per minute.

Volume of water flowing in cubic ft. per minute = width × average depth × rate of flow $= \frac{11}{2} \times \frac{1}{3} \times \frac{240}{1}$ = 440 cubic ft. per minute.

Actual volume after correction for lag $= \frac{440}{1} \times \frac{4}{5}$ = 352 cubic ft. per min.

### WEIR METHOD.

The weir method is a more accurate method for smaller streams. A weir or dam of planks is erected in a quiet part of the stream, the top gauge board of which should be bevelled on the downstream edge and accurately levelled. Sand bags should be used to prevent water leakage at the sides and bottom. A stake should then be driven into the stream bed about 3ft. upstream and to the level of the top of the gauge board. The depth of water is measured from the stake top (Figs. 2 and 3). The quantity of water flowing over the weir can then be found from the accompanying table.

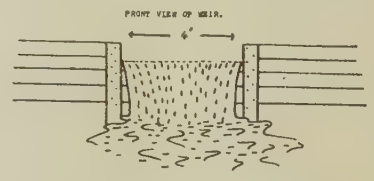



*Fig. 2.*—**Front view of weir.**

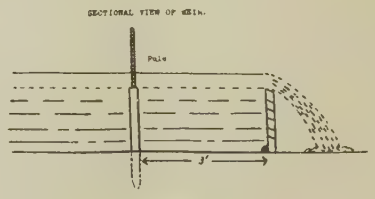
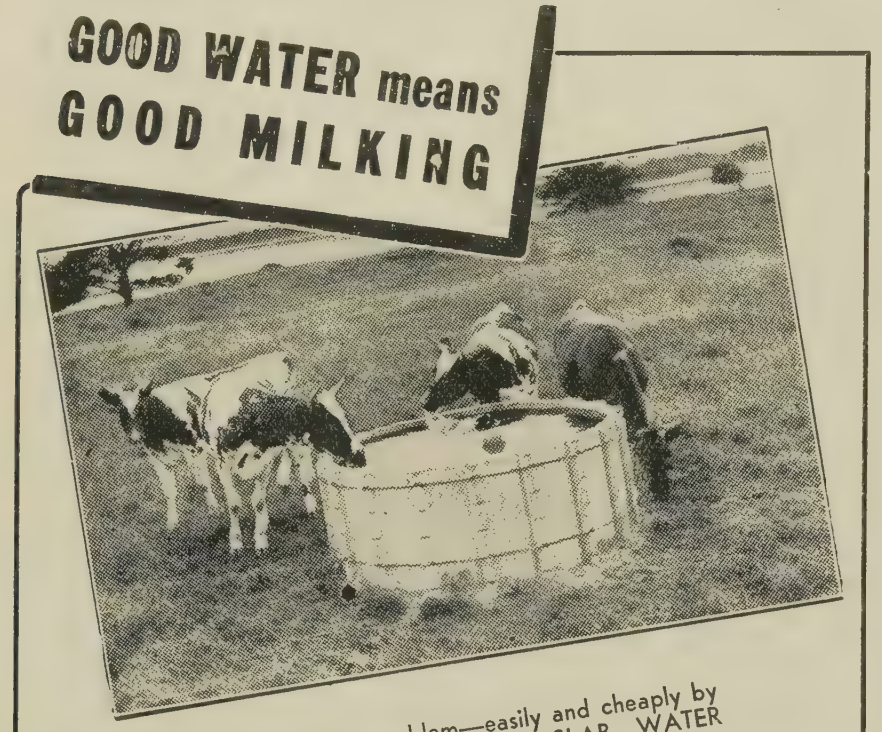



*Fig. 3.*—**Sectional view of weir.**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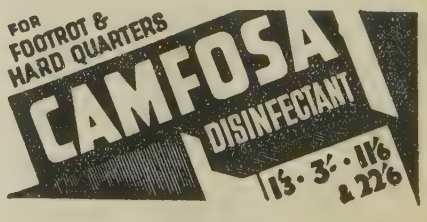

**CUBIC FEET PER MINUTE PER FOOT WIDTH OF WEIR.**

| Weir Depth. Inches. | | ⅛in. | ¼in. | ⅜in. | ½in. | ⅝in. | ¾in. | ⅞in. |
|---|---|---|---|---|---|---|---|---|
| 2 .. .. | 12.90 | 14.16 | 15.42 | 16.74 | 18.06 | 19.44 | 20.82 | 22.26 |
| 3 .. .. | 23.70 | 25.20 | 26.70 | 28.26 | 29.88 | 31.50 | 33.12 | 34.74 |
| 4 .. .. | 36.42 | 38.16 | 39.90 | 41.70 | 43.50 | 45.30 | 47.16 | 49.02 |
| 5 .. .. | 50.24 | 52.86 | 54.78 | 56.76 | 58.80 | 60.78 | 62.88 | 64.80 |
| 6 .. .. | 66.90 | 69.00 | 71.10 | 73.20 | 75.48 | 77.64 | 79.80 | 82.08 |
| 7 .. .. | 84.36 | 86.64 | 88.22 | 91.20 | 93.60 | 96.00 | 98.28 | 100.68 |
| 8 .. .. | 103.08 | 105.60 | 108.00 | 110.40 | 112.80 | 115.32 | 117.90 | 120.60 |
| 9 .. .. | 123.00 | 125.40 | 128.10 | 130.80 | 133.50 | 136.20 | 138.60 | 141.30 |
| 10 .. .. | 144.00 | 146.70 | 142.40 | 152.10 | 155.10 | 158.10 | 160.80 | 163.50 |
| 11 .. .. | 166.20 | 169.20 | 172.20 | 174.90 | 177.60 | 180.60 | 183.30 | 186.30 |
| 12 .. .. | 189.30 | 192.30 | 195.30 | 198.30 | 201.30 | 204.30 | 207.30 | 210.30 |

NOTE.—Depths less than 2in. are not reliable.

Colums 3 to 9 refer to depths in fractions of 1 inch between the whole numbers for weir depths in inches as set out in column 1.

**EXAMPLE:—**

Width of flow over gauge board = 4 ft.

Depth of flow over gauge board = 5⅜ in.

Then, from the table, 5⅜ inches depth = 56.76 cubic feet per minute, per foot depth of weir.

As weir is 4 ft. wide, flow is 4 × 56.76 = 227.04 cubic feet per minute.

**TANK METHOD.**

For very small quantities an accurate measurement may be made by diverting the water into a tank or drum of known capacity and measuring the time taken to fill the receptacle.

## *Measuring "Head"*

The fall or "head" available is, for all practical purposes, the difference in level between the water surface at the intake and the floor level at the power house. In the case of turbines fitted with a draught or suction tube, the "head" is the difference in level between the water surface at the intake and the discharge level in the tailrace. Usually the machinery is set 5ft. to 10ft. above tail water in order to be clear of floods.

Where a surveyor's level and sighting staff are not available, fairly accurate results can be obtained in measuring the water head by sighting along an ordinary carpenter's level on to a measuring rod held by an assistant. This is conveniently done by fitting the

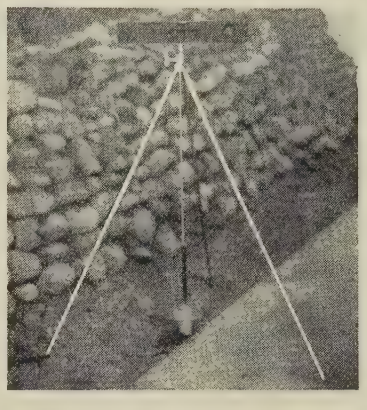

*Fig. 4.*—**Level fitted to tripod for sighting to measuring pole.**

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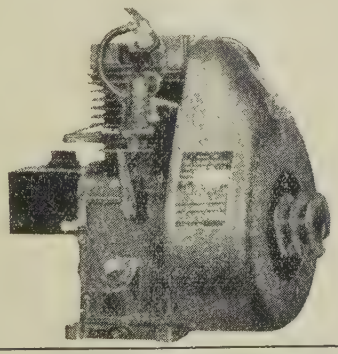

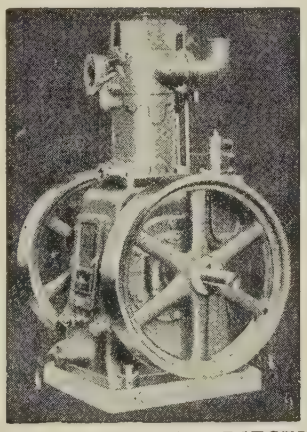

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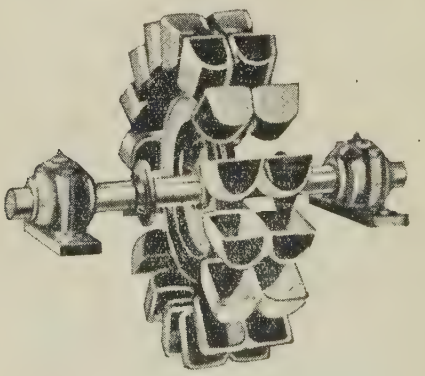

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level to a tripod to which a plumb-bob has been attached (Fig. 4). The first sight is taken levelled to the proposed height of the filled dam, and a reverse view from the same position taken in the downstream direction to a sighting pole notched in feet and inches. The reading is the fall between the point on which the pole rests and the proposed dam water level. Further readings down to the power house site should be taken downstream with the sighting level and tripod erected to the same height (hence the necessity for the plumb-bob) over the point where the staff had been previously held. The sum of these readings less the height above ground of the level at each shift after the first will give the total head. The working head will, where an open headrace is necessary, be the total head less the fall between the dam level and the pipeline intake.


# POWER for NOTHING

**EXPERT ADVICE ON HOW TO HARNESS THAT SMALL STREAM—TO GIVE POWER FOR PRACTICALLY NOTHING!**

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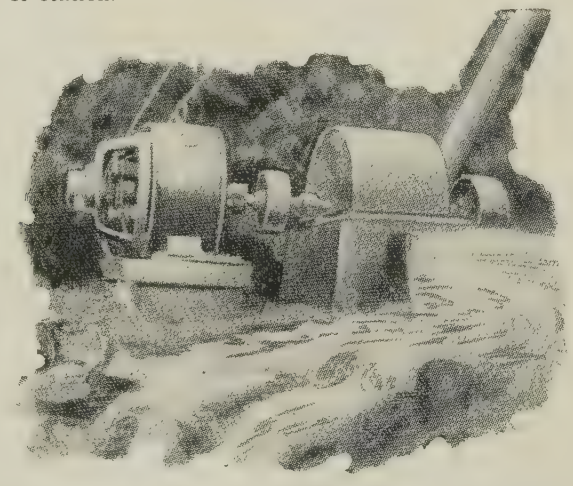

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Being beyond the power lines is no draw-back. IF YOU HAVE THE STREAM, WE HAVE THE PLANT TO DO THE JOB. We have equipped many water-power installations over the past 30 years, including the only water-power plant on the Chatham Islands, using Pelton Wheels, Turbines or Water Wheels to drive the generating plant. High efficiency and lowest installation cost are assured.

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"Pelton wheels manufactured—from ½ h.p. to 400 h.p."

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## *Estimating Theoretical H.P.*

The theoretical H.P. available can be calculated from the formula H.P. = (head measured in ft.) × flow (cubic ft. per minute) ÷ 530.

**EXAMPLE:—**

Assuming head 40 ft.; flow cubic ft. per minute (previous example) 224 ÷ 530.

(40 × 224) ÷ 530 = approx. 17 h.p.

## *Actual Power Available*

It should be realised that the theoretical energy so estimated cannot all be translated to electrical energy for a number of reasons. Unavoidable losses will be caused by such factors as seepage in the intake raceway, length and diameter of the pipeline from intake to power house, pipeline bends, and the efficiencies of the turbine or waterwheel, together with the dynamo, in converting mechanical to electrical energy. Thus, in reckoning the actual H.P. a safe allowance is 50 per cent. of the theoretical H.P.

### Power Requirements

| | Watts. |
|---|---|
| SHED: | |
| Milking shed motor 1 h.p. .. | 746 |
| Separator and Water Pump Motors, 2-¾ h.p. .. .. | 374 |
| Hot water cylinder, 750w. .. | 750 |
| Shed lights, 3-60w. .. .. | 180 |
| DOMESTIC: | |
| Electric range (2 elements burning) .. .. .. | 1,500 |
| Hot water cylinder .. .. | 750 |
| House lights, 7-60w., 1-150w. | 570 |
| Toaster 550w., Radio 60w., Iron 750w., Kettle 1,000w., Cleaner 44w., Washer 186w., etc. .. .. .. .. | 2,590 |
| Total .. .. | 7,460 |
| H.P. .. .. | 10 |

*Fig. 5.*—Listing the total power demand.

Most farm power plants are designed so that the generator is running continuously, and in these circumstances the dam serves only to divert the volume of water along the raceway which is immediately required to operate the plant. Large storage dams similar to those of the major hydro-electric schemes would, on the score of cost, be out of all reason for a small farm hydro-electric scheme. If the power demand is for short periods only and the stream is incapable of sustaining this load continuously, a small storage dam will be necessary to build up a water reserve which can be drawn on when power is required.

*Fig. 6.*—The dam and spillway (right) with the intake raceway along the hillside (bottom foreground) looking upstream.

*Fig. 7.*—The reverse view, looking downstream, shows the dam with the raceway to the right and the spillway to the left.

*Fig. 8.*—The intake raceway channelled along a hillside.

### *Reckoning Power Requirements*

The power needed to operate electric equipment is usually expressed in watts, 746 watts being equal to one H.P. (Fig. 5). Farm power schemes utilising current for domestic and shed use usually operate with a minimum of 3½ h.p., the load being made up as follows:—

Milking machine motor 1½ to 2 H.P. (old style) or ½ to 1 H.P. for modern rotary vacuum pump; water pump, separator, or shearing units, each ¼ H.P.; hot-water cylinders, each 750 watts or 1 H.P.; lighting about ½ H.P.; cooking range (heat storage type), 1 H.P.

The full power load may be estimated in this manner as H.P. by totalling the wattage of all appliances needed and dividing the figures obtained by 746. It is necessary to point out that this will be the "total" load were everything listed in use at the one time. As such a power demand is most unlikely, the "peak" load of the energy required to operate the appliances in use at any one time is often more important. Consequently, the total load can be built up above the generator's capacity provided everything is not in use simultaneously. Installations having insufficient power to run the total

*Fig. 9*—The terminal point of the raceway concreted and with a wire screen from which water is led down by pipeline to the power house below.
*Fig. 10*—The power house and water discharging to the valley floor.


# Every Wagon Wanted

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**Distribution of food and produce, fuel and everything else so necessary to our existence is very largely dependent upon the unhindered and constant movement of all the rolling-stock of the Railways. Every loaded wagon standing idle means inconvenience or delay somewhere.**

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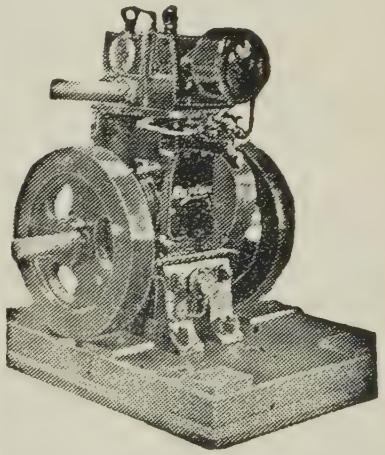

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JAVA MOLASSES is high in Carbohydrates, and also contains approximately 12% minerals, including calcium, magnesium, potassium, sulphur, chlorine, iron, sodium and phosphorus.

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load all at once may be operated successfully by switching off water heaters when other equipment or machinery is in use.

In regard to the domestic cooking range, the heat storage type, which is efficient and popuar, has one element burning continuously, and the range is therefore always ready for immediate use. A further element will quickly raise the oven heat as required, while a draught vent controls minimum temperatures.

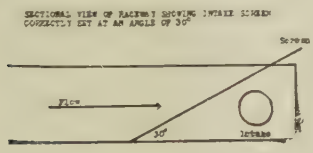

*Fig. 11.*—Sectional view of raceway, showing the position of the intake screen.

## *Water Wheels, Pelton Wheels or Turbines?*

Water wheels are an age-old means of converting the energy of moving water to mechanical power. While it is not proposed to detail their construction, they can be of the overshot, breast, or undershot type. Water wheels are most suitable for operating where there is a fairly large flow of water with a low head, or fall. While cheaper than a turbine to install, if erected in the stream bed a water wheel is subject to "drowning" in periods of flooding. Again, water wheels turn relatively slowly, and require a high gearing to the dynamo; also, the flow of water to the wheel is not easily adjusted to compensate for sudden variations in electrical load. This latter point may be the cause of overloading and the burning out of elements, motors, or lights.

*Fig. 12.*—The raceway carried across intervening gullies by the erection of a secondary stone-work dam.

Metal water wheels of the type shown in Fig. 13 are superior to wheels constructed of wood, as they can be accurately balanced and will remain balanced. Wood will, in time, become waterlogged, and rebalancing is difficult following any repair. A 10ft. to 12ft. head of water is, in many cases, quite suitable for driving a water wheel of the overshot type.

Pelton wheels operate best under a fairly high head of water, 30 to 300 ft. or more, and with little trouble can usually be located out of harm's way in the event of flooding. The generators in two of the power houses illustrated (Figs. 5 and 16) are driven by pelton wheels. In addition, pelton wheels can be constructed in New Zealand—a decided advantage at the present—and they also operate on a low maintenance, and give little trouble. Further, they are readily fitted with an automatic oil pressure governor controlling the stream of water at the jet, which, in turn, regulates the electrical current and prevents sudden overloading when one or other electrical appliance is switched off. The governors, worked by oil pressure, are constructed so that a stainless steel deflector is interposed between the nozzle and the pelton wheel to deflect sufficient water away from the wheel to keep it at regular and constant speed up to the limit of full load.

*Fig. 13.* — A 12ft. all-metal water wheel, the shafting of which is ball-bearing mounted.

Turbines are made in diverse types for high or low heads, commonly 10 to 65 ft. spiral or casing types, and are more suitable where large volumes of water can be utilised and are available throughout the year. They are efficient

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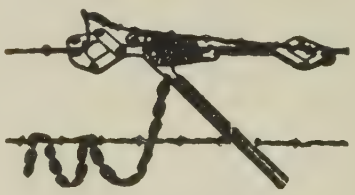

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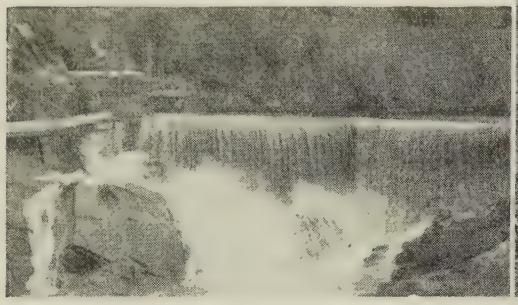

*Fig. 14.*—The concreted dam and intake (left) feeding the corrugated iron raceway to the water wheel.

*Fig. 15.*—A turbine-type generator. Note the draught tube down to the base of the dam, allowing the plant to use a full head of water.

*Fig. 16.*—A large private power scheme in the Murchison district generating 12-15 h.p. (fall 31 ft.; flow 30 cubic feet per minute in pipeline).

but initially expensive machines, and their maintenance may be greater under some conditions than the simpler pelton wheel. Turbines, like pelton wheels, may be conveniently erected beyond harm's reach in the event of flooding, and they have the advantage that, by fitting a draught tube, the total head of water down to discharge level below the power house floor can be used.

From these brief descriptive notes it may be realised that the particular scheme and finance available will largely determine the type of power generating equipment necessary.

## *Dam and Intake Race Construction*

As may be seen from Fig. 6, a stone-walled, earth-filled dam, constructed at the minimum of expense, is diverting stream water to the raceway outlet (Fig. 7, right) in this scheme. Concrete, while undoubtedly the most suitable building material for strength and permanence, is unfortunately expensive. Whether the dam is of logs, earth and tree-planted or stone-walled, it is wise to concrete both the spillway and the intake lead to the raceway.

The illustrated raceway (Fig. 8) was dug with the water following on behind to a depth of about 3 inches while digging progressed. No grading or setting out of levels on the hillside was therefore necessary, and when the initial grade had been found the water was blocked where it entered at the dam and the raceway channel deepened on a slightly falling grade. A fall of 1 ft. in 300 to 400 ft. is usually sufficient for this purpose (1 ft. in 396 ft. = 2 in. per chain). At the end point of this earthworks channel (Fig. 9) it was found necessary to concrete a small chamber to allow the fixing of the pipes in which the water was fed down to the power house, about 60 ft. below (Fig. 10). A metal screen to keep back sticks and other obstructing objects is necessary at the pipeline intake (Fig. 11), and with any considerable fall in the raceway an overflow pipe or channel should also be provided at this point.

In this scheme the pipes were 8 in. in diameter, the pelton wheel 3 ft. in diameter, and the output horse power 5. The pelton wheel was coupled by vee belt to the dynamo, with an overdrive on the same beltline to a locally patented oil pressure type governor. This ensured automatic control of water to the pelton wheel jet so that the voltage remained practically constant and without fluctuation throughout the range of the generator's load.


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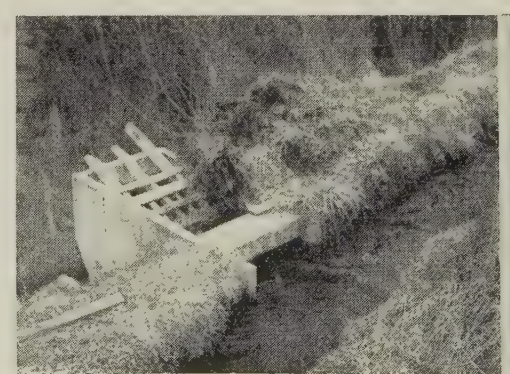

*Fig. 17.* — The intake and screen, showing the surplus water lead off to the right in this scheme.

*Fig. 18.*—The reverse view of the concreted intake.

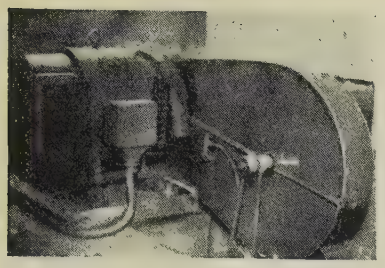

*Fig. 19.*—An enclosed chain drive to the dynamo. The chain is running in an oil bath in which oil is circulated to the chain drive and bearings by a belt-driven oil pump.

An alternative method to that already described for setting out level or easy sloping grades which may be of use in constructing either water raceways or laying off grades for farm roads is as follows:—An A-frame similar to Fig. 20 is made of light timbers with a span of 10 ft. or more. From the apex of this frame a weighted string of the length shown is hung. Next, two pegs are driven the correct distance apart in a shallow pond so that their tops are at water level. The frame is then rested on the pegs and the position at which the string passes across the cross-bar is marked. This is checked by turning the frame around end for end. If the string does not come against the same mark the pegs are not quite level and a second mark should be made. The mean of the two positions is permanently marked on the frame as level position.

In setting off a grade of, say, 1 ft. in 396 ft. with a frame of 11 ft. span, it will be necessary to raise one end one-third of an inch. A piece of wood of this thickness is fastened to one foot of the frame. In use, the A-frame is then rested on pegs driven at, say, 11 ft. intervals, the raised end being on the peg at the lower level. When this latter peg is driven so that the string on the frame crosses the previously marked level position the required grade has been set off.

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## *Cost*

The cost of the completed power house, including shed, pelton wheel, governor and dynamo of 5 h.p. output as in the scheme illustrated (Figs. 6 to 12), is at present-day prices approximately £90. I am informed that maintenance on the whole installation, including motors and domestic appliances, should not exceed 5 per cent. of the capital cost per annum.

All electrical apparatus, piping and wiring, was, of course, an additional charge, and the farmer himself did the work required in the erection of the dam, raceway, etc. In this district many such installations are proving highly efficient and worthy investments saving otherwise heavy fuel purchase and giving cheap, continuous and reliable service.

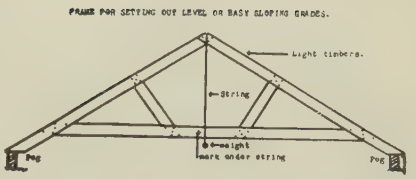


*Fig. 20.*—A frame suitable for laying off levels or easy grades.

## *Acknowledgments*

The writer acknowledges technical assistance in the preparation of certain material in this article to Mr. J. Ford, Public Works Department staff, Nelson, and Messrs. Geo. Higgins Ltd., electrical engineers, Nelson.


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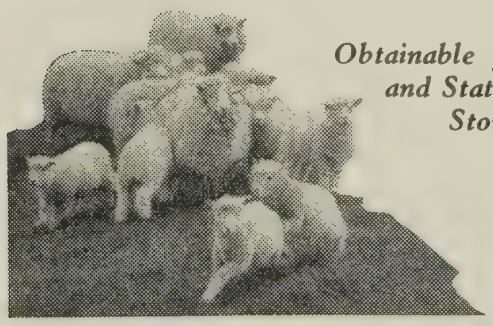

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# COBALT DEFICIENCY IN SHEEP

By

J. F. FILMER,
Acting Director, Animal Research Division,
Wellington.

## Is Monthly Drenching Effective?

TOPDRESSING with cobaltised superphosphate is now widely recognised as a convenient and effective method of preventing "bush sickness." Where autumn topdressing of pasture is practised, the application of 5oz. of cobalt sulphate (this amount is present in 1cwt. of cobaltised superphosphate of the 6lb. cobalt sulphate to the ton grade) per acre with the annual topdressing proves 100 per cent. effective, and no other method of control need be sought.

There are, however, some areas where, for various reasons, regular topdressing is not practised. Here, cobalt must be supplied in some other way, and the most usual method is to allow free access to cobaltised licks. This is quite satisfactory if the sheep eat adequate quantities of the lick. A suitable lick may be made by mixing 1oz. of cobalt sulphate with 4cwt. of salt and 1cwt. of linseed meal. On "bush sick" country 100 sheep would require to eat about 7lb. of such a lick each week to obtain sufficient cobalt to keep them healthy. Unfortunately it is often difficult to get sheep to eat a lick, and even where the majority take it readily, a significant percentage either neglect it altogether or else eat very small quantities, and these naturally become "bush sick."

### *Drenching Trials*

Because of this difficulty with licks, drenches have often been considered as a means of supplying cobalt. It has been quite definitely established that drenching regularly with cobalt at short intervals will both prevent and cure "bush sickness," but this is not convenient with large numbers of sheep, and farmers have often inquired whether cobalt would be effective if given at monthly intervals. To settle this question, Dr. C. S. M. Hopkirk conducted some drenching trials on a "bush sick" farm at Arohena between November, 1936, and April, 1937 ("New Zealand Journal Agriculture," 54, 6, 344).

Ewes with lambs at foot were divided into four groups. One of these received no treatment, while the others were drenched with cobalt sulphate solution. The doses were so arranged that in all of the treated groups each ewe received 6 milligrams (mgs) and each lamb 3 mgs. of cobalt per month. (One ounce of cobalt sulphate contains about 5,600 milligrams of cobalt.) The total monthly amounts were divided into drenches, which were given at the following intervals:—

Group 1: Ewes twice weekly; lambs once weekly.

Group 2: Ewes and lambs once weekly.

Group 3: Ewes and lambs once monthly.

The results indicated that although the ewes and lambs which were drenched monthly remained alive the lambs grew at only half the rate of those drenched every week. Some ewes and lambs which became "bush sick" in the control group were also treated with the monthly drenches, but the results were not very satisfactory.

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It will have been noted that in this experiment the ewes and lambs drenched once a month received the same amount of cobalt per month as those drenched once or twice weekly.

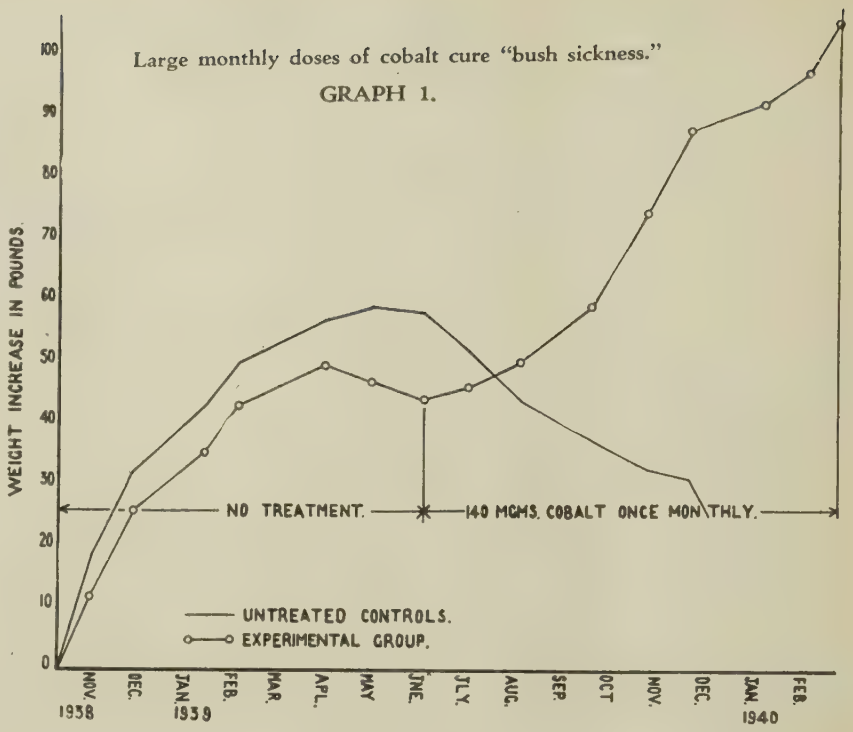
Dr. Hopkirk, in describing the experiment, mentioned that some farmers had been giving very much larger doses at long intervals. In April, 1939, attention was again drawn to this practice when one farmer reported very good results from monthly drenches in which ewes received 140 mgs. and lambs 70 mgs. cobalt each. It was therefore decided to try the effect of this treatment at the Mamaku State Farm, where experiments on the control of "bush sickness" were being conducted.

## *Further Trial*

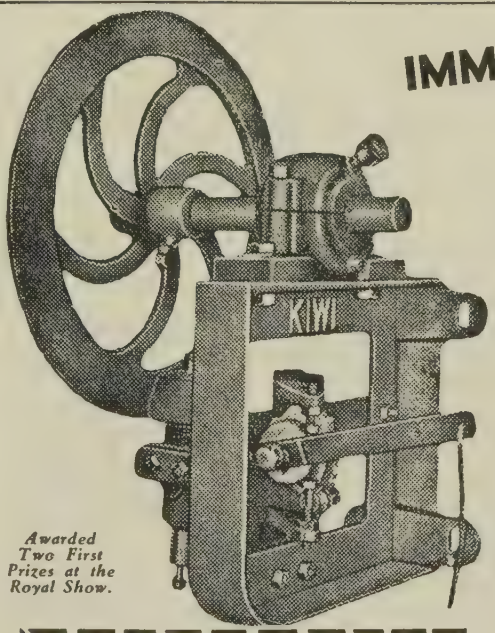
There were available 26 Romney lambs which had been born between August 14 and October 25, 1938, and had grazed in a "bush sick" paddock since birth without receiving any treatment. Starting on June 7, 1939, six of these lambs, which were all losing weight, received a drench containing

Large monthly doses of cobalt cure "bush sickness."

GRAPH 1.





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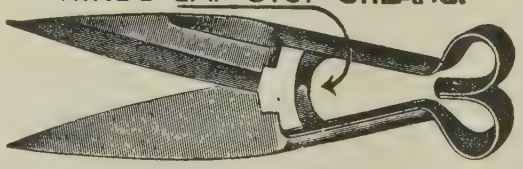

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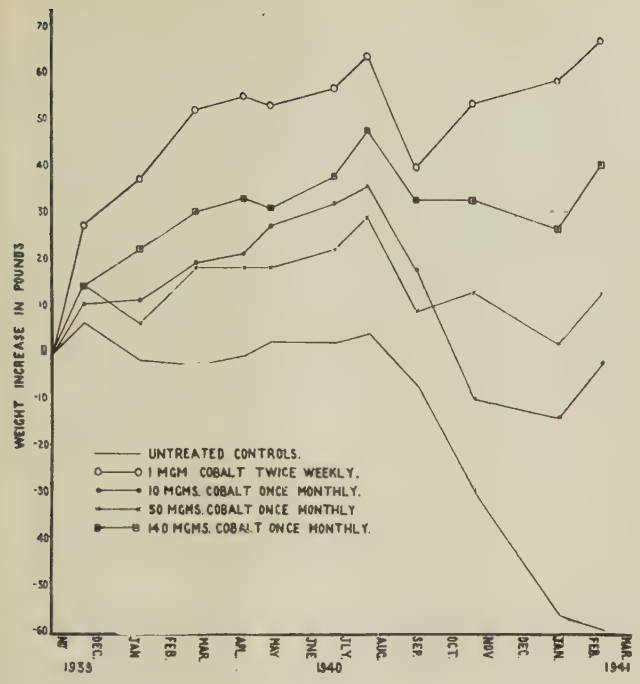
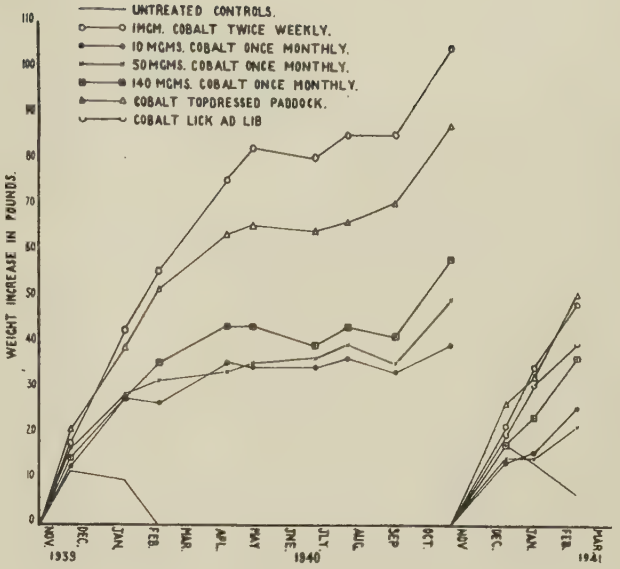



GRAPH 2.
**The effect of various sized monthly doses of cobalt compared with normal bi-weekly doses in preventing "bush sickness" in ewes.**




GRAPH 3.
**The effect of various sized monthly doses of cobalt compared with normal bi-weekly doses and with cobalt licks and cobalt topdressing in preventing "bush sickness" in lambs.**

140 mgs. of cobalt once a month. The results are shown in Graph 1. The treated lambs responded immediately, and with one exception made remarkably fine gains. From June 7, 1939, to February 28, 1940, a period of 266 days, they made an average gain of 62lb. If one lamb which lost weight (probably from some cause other than "bush sickness") be excluded, the average gain was 71lb. and the average weight on February 28, when the sheep were 16 months old, was 135lb. During the same period nine of the 20 untreated lambs died, and with one exception the others all lost weight. These results suggested that monthly drenches were quite effective in curing "bush sickness" if very large doses were given.

Unfortunately, however, none of these lambs had been treated by the standard methods of grazing on cobalt-topdressed paddocks, giving cobalt licks, or normal doses of cobalt in drenches at short intervals. It was thus not possible to say how this method of treatment compared with those more generally practised. A further experiment was therefore conducted. Shortly after lambing was completed in 1939, 34 Romney ewes which had been running in a "bush sick" paddock since July, 1938, were divided into five groups. Seventeen were kept as untreated controls, five received 1 mg. of cobalt twice weekly, and the other three groups of four ewes each received 10, 50, and 140 mgs. of cobalt respectively once a month. The experiment was started on October 26, 1939, and ended on February 13, 1941. The lambs born in 1939 and 1940 received the same treatment as the ewes, and drenching began when they were about one month old. The results are shown in Graphs 2 and 3.

### *Average Weights*

It will be seen in Graph 2 that the untreated ewes maintained a fairly constant weight until the 1940 lambing, after which they lost weight rapidly. By the end of the experiment only

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three out of 17 remained alive, and their average weight was then only 106lb. Of the treated ewes, those receiving 1 mg. of cobalt twice weekly did much the best, while the monthly drenched groups were arranged in order of the size of dose. One ewe in the group receiving 10 mgs. of cobalt per month died of "bush sickness." The only other death was a ewe in the group drenched twice weekly which died at lambing. The average weights at the start and the end of the experiment are shown in the following table. The rather wide divergence in initial weights is due to the fact that the groups were picked on the basis of lamb weights.

| Treatment. | Ave. weights | |
|---|---|---|
| | 26/10/39 | 13/2/41 |
| Untreated controls .. .. | 147 | 106 |
| 1 mgm. cobalt twice weekly | 115 | 167 |
| 10 mgms. cobalt once monthly | 129 | 127 |
| 50 mgms. cobalt once monthly | 149 | 148 |
| 140 mgms. cobalt once monthly | 128 | 143 |

Graph 3 shows the growth of the 1939 and the 1940 lambs from the above ewes. In addition, data for lambs from a paddock topdressed with cobaltised superphosphate have been graphed for both years, and for 1940 a group of lambs receiving cobalt lick has also been included.

In 1939 all of the controls died from "bush sickness" during January, February, or March. No deaths from "bush sickness" occurred in any of the treated groups, but the lambs in the groups drenched once a month did not do nearly so well as those drenched twice weekly or those grazing on pasture topdressed with cobaltised superphosphate. The average liveweight on October 24, 1940, of the lambs drenched twicé weekly, those grazing on pasture topdressed with cobaltised superphosphate, and those receiving 140 mgms. of cobalt once a month were 136lb., 129lb., and 91lb. respectively.

In 1940, similar results were obtained. When the experiment terminated on February 13, 1941, the average weights were as follows:—Drenched twice weekly, 88lb.; grazing cobalt-topdressed paddock, 93lb.; cobalt lick, 69lb.; 140 mgms. of cobalt once monthly, 67lb. The low average weight of the lambs on cobalt lick was due to the fact that several of these lambs were obviously not taking the lick. The heaviest lamb in this group was 92lb., but there were three lambs under 50lb., the lightest being only 31lb.

## *Summary*


(1) Drenching at monthly intervals with very large doses of cobalt will keep ewes and lambs alive on "bush sick" country and will even cure "bush sickness."

(2) Lambs treated in this way do not grow nearly as rapidly as those drenched once or twice weekly or those grazing on pasture topdressed with cobaltised superphosphate.

(3) Monthly drenching with very large doses of cobalt gave results similar to those obtained from giving free access to cobalt lick. It was, however, more expensive, as the drenched lambs received about fifty times as much cobalt as the lambs on lick.

(4) In view of the above results, monthly drenching should not be practised where topdressing is possible or where sheep will take licks.

(5) If, for special reasons, it is necessary to resort to monthly drenching, the drench should be made by dissolving 1lb. of cobalt sulphate in one gallon of water. The monthly dose for both ewes and lambs is half a fluid ounce. It is absolutely necessary to drench the ewes as well as the lambs.



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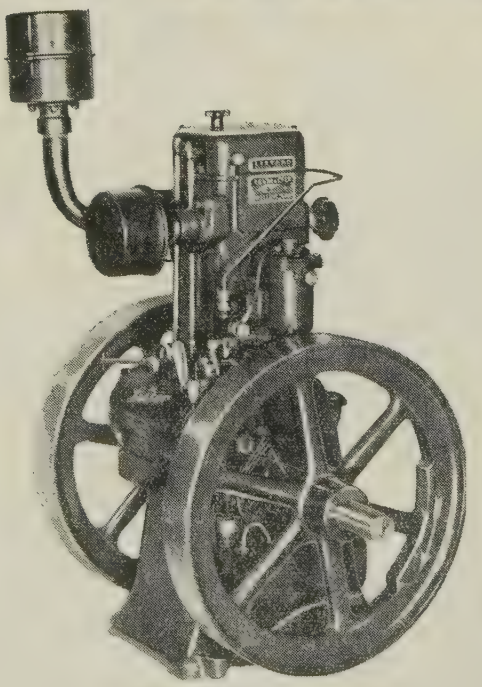

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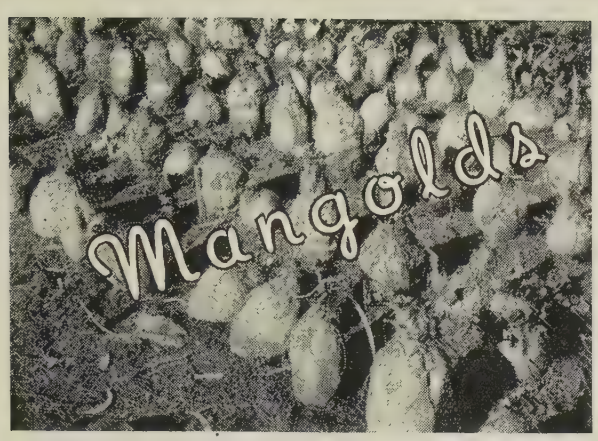


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# Here Is A Crop To Keep Your Stock In Condition

By

J. E. BELL,
Land Utilisation Officer,
Wellington

THE mangold, because of its high yield of feeding value per acre—probably higher in this respect than any other crop—and its excellent keeping qualities, claims the attention of all producers, whether of dairy products, mutton, beef or wool. The mangold fails as a fodder in that it contains very little protein. Therefore, when fed to cows it will maintain condition, but is not productive of milk, which is secured from the grass consumed. If, however, cows on a ration of hay, mangolds, and a limited supply of grass are deprived of the roots, then the production of milk will fall, because the grass consumed is required for maintenance purposes. When fed to pigs, mangolds should be supplemented with meat-meal fed at about ½ lb. per pig per day to make up for the protein deficiency.

The mangold seedling is slow in establishing, being at the mercy of the faster-growing weeds. Consequently, the crop requires much attention during the early half of its growing period. The mangold must be pulled a month or so before being fed to stock. During this period it is said to "ripen," and during this process the poisonous substances present in the fresh mangold are made innocuous. Thus, the growing of mangolds entails a large amount of hand work, making it a crop suited to the smaller and more intensive farms.

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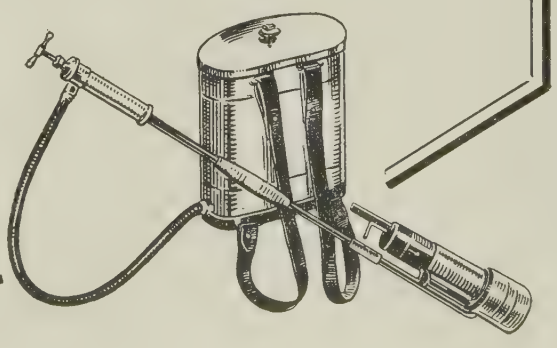

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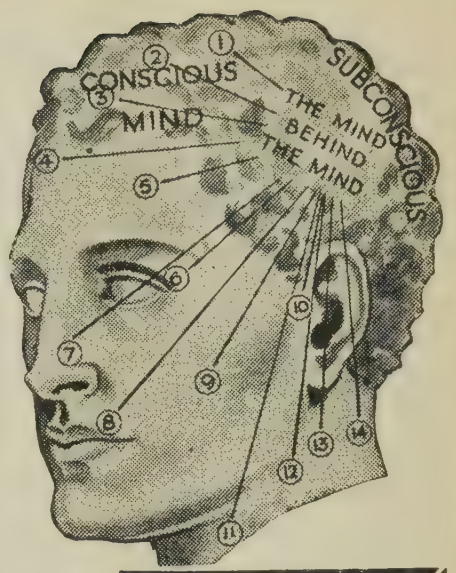


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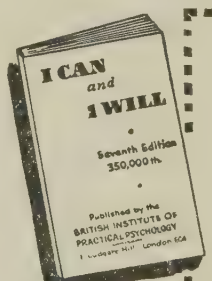


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Several intercultivations and hand weedings may be necessary to keep the young plants free from weeds. After January, the crop is usually far enough advanced to look after itself.

In northern districts where weed growth is very fast, the transplanting method should be adopted. The seed is sown in September in rows 12 to 14 in. apart in specially prepared beds at the rate of 1 oz. per chain, using 4 lb. for every acre to be planted. The seed bed is prepared and fertilised in the same way as for growing mangolds in the normal way.

### *Transplanting*

From December until January, and sometimes as late as February, the mangold plants will be ready for transplanting, although the farmer does not attempt this work if the ground is dry. Mangolds will not develop well if they are transplanted at too young a stage, and best results are obtained if transplanting takes place when the plant roots have begun to swell and are about the size of a man's thumb. The mangolds are planted about 10 to 12 inches apart after the plough, a row being placed every second furrow. Planters soon become expert at the work, and cover the ground at about one-third the speed of a planter of potatoes.

The mangold plants are placed on the furrow face, so that the succeeding furrow just covers the rooting system. Later, some growers will tramp the soil firmly around the roots. Before planting, a good dressing of artificial fertiliser is applied to the face of the furrow, the quantities applied varying from 5 cwt. to 1 ton. A suitable mixture for some districts would be 4 cwt. superphosphate, 4 cwt. blood and bone, and 4 cwt. 30 per cent. potash salts per acre.

There is no set rate and kind of fertiliser for any crop, and again, as for the seed bed, the amount applied will vary according to the soil fertility and the amount of rainfall—the higher the fertility and the less the rainfall the less fertiliser being required. Mangolds respond markedly to heavy dressings of animal manure or well-rotted vegetable material.

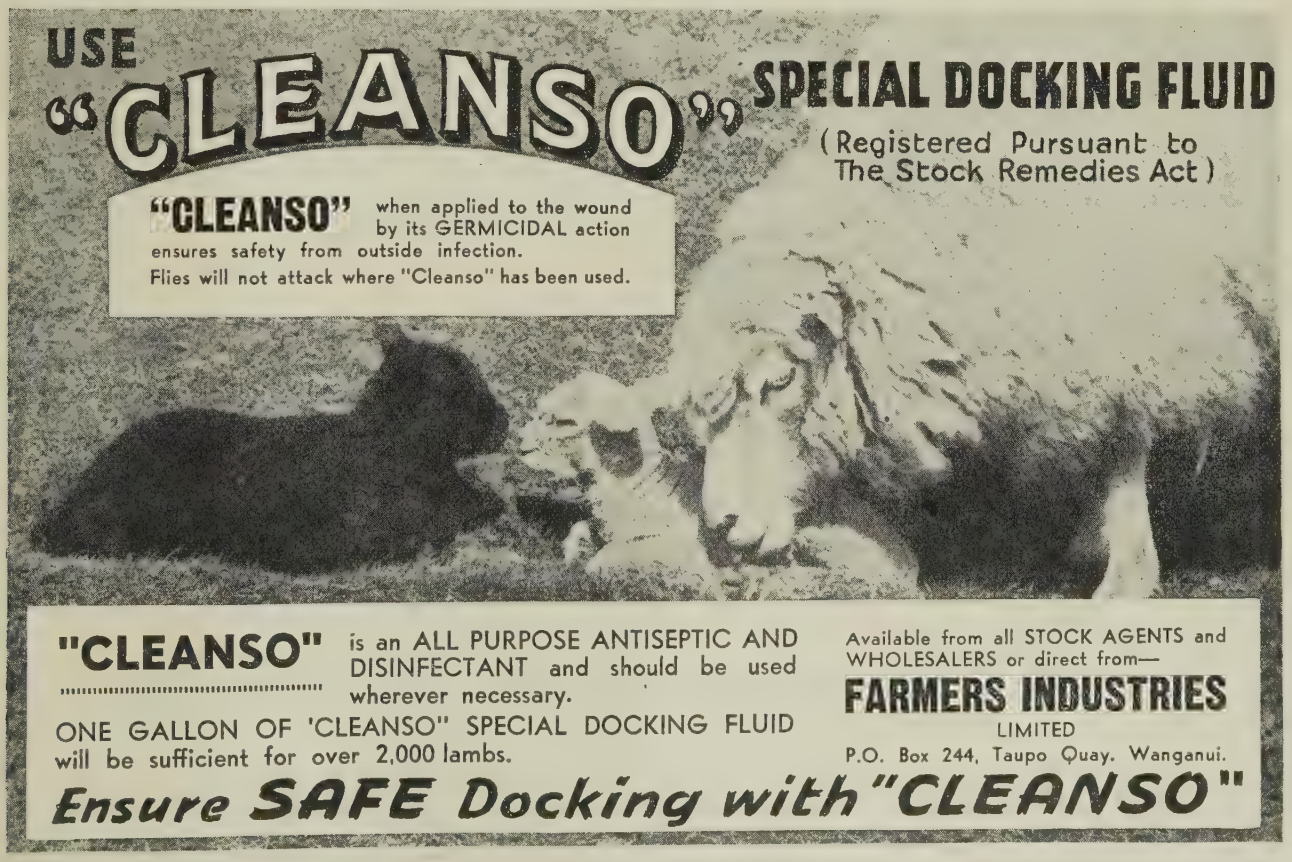
After the mangolds are transplanted no further attention is necessary. From that stage onwards the mangolds can cope with the weeds themselves, for they have a great start on them. The soil is fine, and intercultivation, by interfering with the rooting system and knocking about the leaves, would do more harm than good.

This system of growing mangolds may appear to incur a large amount of work, but it certainly involves less work than the normal method in ground infested with weed seed.

### *Variety and Yields*

A popular variety is the Yellow Globe, because of its high yield and solidity. The kind or variety used does not matter a great deal, however, as the higher yielding ones are usually poorer in dry matter content, so that almost any variety will produce about equal amounts of dry matter per acre. The best crops are obtained on well-drained light soils; heavy, poorly drained soils are unsuited to mangold culture.

Being very hardy, the mangold plant does not suffer much from disease, and resists drought conditions better than other root crops. In low rainfall districts its yield is generally about 20 tons per acre. In wet districts the normal yield is about 40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tons, but in some places where soil and rainfall are very suitable, yields average about 50 tons per acre. There are yields on record of more than 100 tons per acre, but these are most unusual.

The mangold is so commonly grown in England that the term "roots" usually signifies this crop, and hay and "roots" have always been the basic maintenance fodder for cattle in England. During the last few years before the war cheap imported food had replaced the "roots" to a large extent, but "roots" have now reassumed their past important position. In New Zealand, also, mangolds have their part to play, and it is to be hoped that all farmers who can make use of them will do so.

## Shearing Classes at Roxburgh

SHEARING classes will again be inaugurated at Roxburgh from October 22 to November 7.

Following the outstanding success of the classes which were inaugurated last year by the Otago Primary Production Council, assisted by a strong local committee, it has been decided that classes be held again upon the dates mentioned. Last year, twenty learners received a thorough training in blade and machine shearing, and although some of them had never handled a sheep before, practically all were able to shear 80 to 100 sheep a day towards the end of the course. Last year's learners came from all parts of Otago, North Otago, and Southland, the ages ranging from 16 to 30. Thirteen of the twenty immediately received pens in shearing sheds in different parts of Otago and Southland, and ended up the season as experienced shearers. The remainder, although not exclusively engaged shearing, did a limited amount of shearing in their own districts.

On September 1, Messrs. J. W. Woodcock and A. C. Cameron, representing the Otago Primary Production Council, addressed a representative meeting of farmers at Roxburgh, including the majority of those who had acted upon the committee and supplied sheep last year. After hearing the deputation, it was unanimously agreed that shearing classes be again inaugurated in the district, and the following committee was set up to finalise arrangements:—

Chairman, Mr. G. Huyshe-Eliot (Roxburgh); honorary secretary, Mr. R. T. Kinaston (Roxburgh); committee, Messrs. John George, L. McKnight (Roxburgh), Andrew Gibson, T. Graham (Millers Flat), J. A. Pannett, M. McCrae, H. Armitage, W. Johnstone (Teviot), G. C. Calder (Department of Agriculture, Alexandra).

The dates decided upon were:—Assemble Monday, October 27; instruction Tuesday, 28th to Friday, 7th November inclusive (a week later than last year's dates).

The Council of Primary Production has been assured of the wholehearted co-operation of the following bodies:—N.Z. Farmers' Union, Otago Provincial Council, N.Z. Sheepowners' Federation, Otago and Southland Branch; The Dunedin Stock Agents' and Woolbrokers' Association; N.Z. Workers' Union; Department of Agriculture and the State Placement Service.

The following local committee, set up by the Primary Production Council, will co-operate with the Roxburgh Committee:—Messrs. A. C. Leary, J. W. Woodcock, A. Wathey, and A. C. Cameron.


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# FIRST AID TREATMENT OF WOUNDS IN HORSES

By
A. G. BRASH,
Veterinarian, Christchurch

AS the average farmer may from time to time be called upon to render first aid to an injured horse, a knowledge of simple methods of treating wounds and the principles underlying their healing is beneficial. It is convenient to discuss the treatment of wounds under three headings:—

**1. Controlling the Horse.**—It is, of course, necessary to have the horse properly secured, and in this respect a twitch will be found very useful. In the case of a fractious horse a foreleg may be held up, or a sideline applied to one or both hind fetlocks. This is sufficient restraint in most cases.

**2. Stopping the Bleeding.**—There is always a certain amount of bleeding from freshly inflicted wounds, and unless it is known how to stop it, this bleeding may cause some alarm. Often the bleeding is out of all proportion to the size of the cut. The simplest way of stopping the flow of blood is by means of pressure. A piece of cotton wool is placed over the wound, and if in a suitable position, it should then be bandaged rather tightly. If it is not possible to apply a bandage, the cotton wool must be held in position with the hand until bleeding stops.

**3. Cleaning the Wound and Applying Dressing.**—Once the bleeding has stopped the bandage may be removed after about an hour and suitable dressing applied. Many different antiseptic dressings may be used, all serving the one chief purpose, which is to prevent the growth of harmful bacteria and so promote healing. Actually, more depends on the care and method of application of the drug than on the drug itself. Cleanliness is of first importance in the treatment of any wound, and is all-essential for rapid healing. That is why, before attending to a wound, the hands should be thoroughly cleaned and all utensils boiled.

A good deal of misunderstanding exists as to the strength of antiseptic applications suitable for wounds. A common fault is to make solutions too strong. Strong disinfectants not only kill the germs, but also kill the living tissue cells which are the active agents of repair. They merely serve to slow up natural healing instead of assisting it. That is one reason why simple methods are the most effective.

## *Treatment of Wounds In Horses*

In horses, treatment such as follows gives good results. Clip the hair surrounding the wound with a sharp pair of scissors or hair clippers. While doing this, hold a piece of cotton wool over the wound itself to prevent hairs entering. Clipping the hair greatly assists healing by keeping the wound clean. Next, clean the edges of the wound by rubbing with cotton wool soaked in methylated spirits. Do not touch the wound with the hands. Finally, dust liberally with a powder consisting of boracic acid 3 parts and calcium hydrate (slaked lime) 1 part In injuries to the limbs, cotton wool and a bandage keep the part warm, lessen the swelling, and prevent further dirt from entering. The bandage should be removed once or twice daily and the wound dressed as before. The scab should be removed if any pus forms beneath it; otherwise it should be left as a protection. Larger wounds are better left not bandaged to allow free drainage; otherwise they should be treated as outlined above.

Where it is necessary to clean the wound by washing it, warm water containing common salt at the rate of two tablespoonfuls to the gallon may be used; irrigating with cold, clean water from a hose is also effective. For all except the larger wounds, however,

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it is best to use the above treatment without the application of water. In some cases a certain amount of swelling takes place, but in most instances it subsides without further treatment after a few days, provided the wound is kept clean. When the swelling is severe, hot fomentations followed by cold may be used.

Tincture of iodine is useful for treating small cuts and abrasions, and should be applied immediately the injury occurs. It is not suitable for application to larger wounds.

### *Summary*

Summarising, the following are faults most commonly observed in the treatment of injuries to horses:—

1. Sufficient care is not taken in the early treatment of what may appear to be insignificant injuries, with the result that septic complications set in.

2. Lack of care in ensuring cleanliness.

3. The use of antiseptics in too strong solution.

4. Too much washing of wounds. For all ordinary injuries the use of methylated spirits and a dry dressing will give better results.

5. Attempting to put stitches in wounds that would be better left open. Most ordinary injuries to horses heal better without stitches.

6. The above outline of treatment is given merely as first aid treatment of relatively simple wounds. In any injury of a more serious nature it is wise to obtain veterinary assistance.

## Pool Price for Cheese Crates

REGULATIONS have been in force since 1937 appointing the New Zealand Dairy Board to be the sole and exclusive agent of dairy companies for the purchase and supply of butter boxes in which butter may be packed for export.

The average price at which butter boxes are obtainable by the board from box-makers during each season, after making due provision for the cost to the board of acting as the agent of dairy companies and carrying out the powers conferred by the regulations, is spread over all dairy companies by means of a pool price.

Formerly, a similar pool price for cheese crates had not been established, but in the new regulations which replace the former regulations, provision is made for a separate pool price for cheese crates required by the industry upon the same lines as that in force in respect of butter boxes.

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# Timely Cultivation

# Is The Foundation Of The Crop

*"Where grows? Where grows it not? If vain our toil*
*We ought to blame the culture, not the soil."* —*Pope.*

By
W. C. STAFFORD,
Irrigation Officer Timaru.

WITH today's modern, high-speed methods, improved seed and scientific fertilisation, the objects of cultivation are being slowly but surely lost sight of, or are being pushed into the background; yet the successful crop still depends on thorough and timely cultivation, whether it be an annual one, such as wheat, or a permanent one of grass. High-powered tractors, multi-furrow ploughs, combination harrows, cultivators, rollers, seed and manure are all useless to secure economic returns if their use influences the departure from basic principles established centuries ago.

The early agriculturist had but one means of producing a crop—that of cultivation—and this he developed to a high degree. Even today, proper cultivation is still the well-built house in which the crop weathers the storm. Manures, improved seed and power are only additional modern improvements; yet these are the cause of the increasingly familiar sight in spring of the untouched stubble of last autumn's crop. The introduction of power to the farm has caused a slackening of the effort in crop production, undoubtedly due to the knowledge that the work can now be done so much more quickly. The result has been that the time factor, which is perhaps the most important aspect of cultivation, is not allowed to operate properly. If, however, modern methods are used in combination with this essential, the result will be an all-round increase in crop yield and fertility and a decrease in expenditure.

In working land of any description, the object is to provide a suitable place for the particular crop to thrive and grow to its best advantage. In this respect, the habits of the crop must be considered. For instance, what is suitable for wheat would be totally unsuitable for peas. It is not, however, the intention to give an account of the method of acquiring suitable conditions for any particular crop or crops or the cultivation necessary for different soil types. The endeavour is to show that unless the cultivation is carried out with thought to the objective and over a sufficient period, it is not possible to secure the best result.

## *Two Objects*

Cultivation is carried out with two objects in view—firstly, the formation of a satisfactory seed bed, and secondly—and more important, as if this is carried out the former follows as a result—the working of the soil at such a time and in such a manner that those factors which are essential for good germination, growth and productivity are brought about to the best advantage of the crop. It is because of the ease with which the first factor can now be brought about that the second function is being lost sight of. How often today is the cultivation for any particular crop disposed of by the phrase, "The land should be brought to a satisfactory seed bed"? With plenty of power available on the farm, a mechanically satisfactory seed bed can be produced too easily today. Yet such a result can be, and too often is, totally unsuited for crop growth.

It is in the second object that the secret of good cultivation lies. This is the factor which distinguishes the good crop from the poor one. The influence of cultivation on land lies in its ability to control soil structure, soil, air, soil moisture, bacteria, and plant

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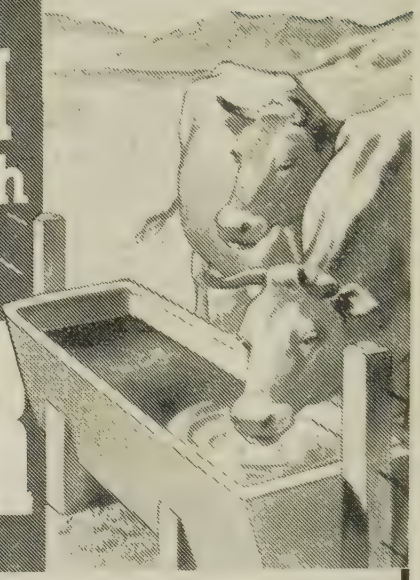

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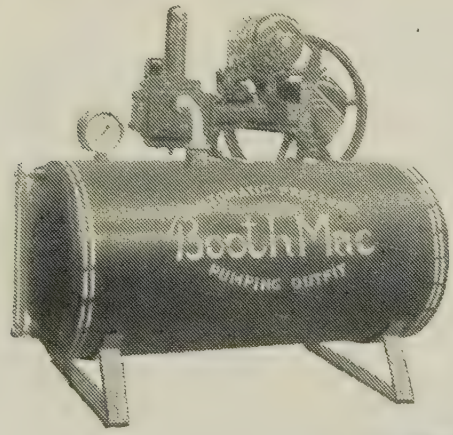


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food, and it should be the object to till the ground at such a time and in such a manner that the most satisfactory condition suitable for crop growing is produced.

As a general rule, it is the use of the wrong implement at the wrong time that is often the cause of poor crops. Instances of this is the ploughing or deep grubbing of land for roots during November and December, which not only disperses valuable soil moisture, but also causes the land to dry out quickly into lumps, which are difficut to break down, thereby preventing adequate consolidation of the seed bed. It is therefore necessary to consider the season of the year as well as the particular implement to be used. If the work can be done only with that particular implement, then steps should be taken to avoid what may be harmful after-effects. In the case of summer ploughing or grubbing, harrowing should follow immediately and not in a day or two's time. This untimely use of implements, however, can be avoided if thought and planning are used in the farm programme.

While under-cultivation is more commonly the cause of poor results, over-cultivation often gives uneconomic returns which are difficult to explain. This most frequently occurs where an area is being cleaned for twitch, creeping fog, or some other weed, the result being that in the effort to clean the soil it is worked to the fineness of cement in dry weather, and seed sown under such conditions cannot give good returns.

The time factor in cultivation is the most important feature, and the agriculturist must exploit it to the best advantage.

### *Use of Fallow*

Too little use is made nowadays of the fallow as a preparation for the crop, but in Canterbury, at any rate, it is almost impossible to establish grass successfully without using this method. Fallowing does not mean ploughing over and then forgetting about it. It means the frequent moving about of the soil throughout the period of rest. The length of fallow depends on the previous crops and the weed-content of the land itself. It is not contended that every crop should follow a fallow, but it is suggested that the rotation should be so ordered as to allow the maximum time to elapse between each crop to enable the following crop to benefit to the full from the cultivation given to the land throughout the period.

It is obvious, therefore, that following an autumn-harvested crop by an immediate autumn or winter-sown crop is not recommended. In many cases this would mean a reorganisation of the rotation if it is to be avoided. Too frequently, under the cloak of efficiency, is stubble land rushed back immediately the crop is off into grass, green feed, Italian ryegrass, or some other crop with poor results, which further jeopardises what often is already a precarious feed supply. There is also the other extreme of allowing stubble land to lie uncultivated through late autumn and winter as it will not be required for sowing until the spring.

### *"Dry" Farming*

Arable farming is confined to districts which have a suitable contour, average soil, and a moderate rainfall, the last of which is essential if crops are to be ripened and harvested in good condition. Unfortunately, moderate rainfall areas also are subject to periods of drought, and in such areas the lighter the soil the greater the effect of dry conditions. It should therefore be the aim in preparatory cultivation to strive to preserve as much moisture as possible so that the crop will not depend absolutely on rainfall received during its growing period.

Carried to the extreme, this practice is commonly known as "dry farming." While there is no need to practise "dry farming" methods on New Zealand's arable land, there is definitely the necessity to conserve soil moisture so that quick germination results and


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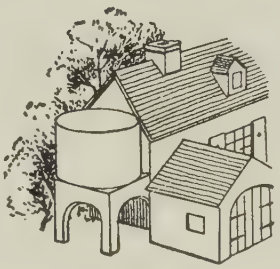

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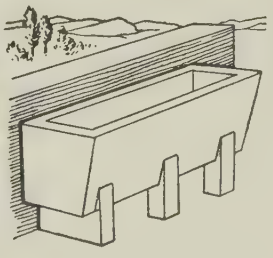

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so that there remains a sufficient supply of moisture to enable the plant to establish and live over what is considered to be an average period of dry conditions. Further, if this aspect is attended to in cultivation, the other soil conditions previously mentioned —that is, soil air, useful bacterial and plant food—also become fulfilled. There is no doubt that it is the moisture factor which prevents good establishment of any autumn-sown crop when it follows a stubble crop, as the previous crop has already exhausted this essential.

### *Conserving Moisture*

In the main, therefore, cultivation should aim at conserving soil moisture. It can, however, also dissipate moisture. This is done by deep cultivation of the soil in dry conditions, and most often occurs in the preparation of turnip and swede land where the work has not been started early enough and the main object is a quick seed bed. As far as the scope of this article is concerned, moisture is taken from the soil in two ways, firstly by transpiration through the leaves of plants. If this takes place through the leaves of the crop planted and not through those of competitors—namely, weeds—the object is achieved, as in this way the plants derive their food and grow.

The second is by evaporation from the soil itself, and it is over this loss that cultivation has the greatest control. It is well known that compact firm land dries out quickly. If, therefore, pasture or stubble land is left through the winter before any cultivation is done when the intention is to sow a spring crop, the natural process of cultivation to produce the seed bed will tend to deplete what is already a precarious moisture supply. If, however, the preparatory cultivation for the same crop were done during the previous autumn and the land allowed to lie in the furrow up to the weather with the previously topworked soil underneath, the result would have been the storing of moisture instead of its dissipation.

### *Time the Essence Of the Contract*

Time, therefore, is the essence of the contract. Cultivation must begin early, and while the effects of poor cultivation are not so evident in the usual autumn- and winter-sown cereals, as they undoubtedly benefit from winter rain falling on loose ground, they are evident in the all too plentiful failures of spring wheat and oats and other spring, summer, and autumn-sown seeds. The preparation of the ground must take place early, the earlier the better. This, unfortunately, is easier said than done, but a few comparatively simple changes in his programme would enable the farmer to obtain the maximum period of cultivation between crops.

Some suggestions are that rape, turnips, swedes, and chou moellier should follow a stubble crop, and that autumn-sown grass should follow the former. These are, however, only effective when cultivation follows immediately the crop is off the ground.

### *Pre-cultivation*

There is no doubt that best results from pre-cultivation are obtained from topwork before deep ploughing. The straight-out ploughing of grass land 5 or 6 in. deep on soils of good depth, especially with the long mouldboard type of plough, is a hopeless proposition if soil moisture is to be conserved, the turf rotted, and a seed bed obtained. Under such conditions there is an insufficient depth of soil to secure an adequate seed bed without bringing to the surface masses of turf and endeavouring to work them down. Further, the air spaces created in the folds of the furrow prevent the turf from decaying quickly. This results in the first crop always being


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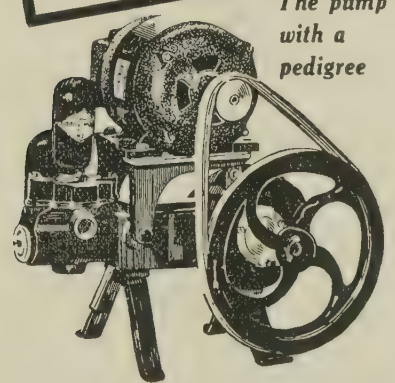

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considered more or less a failure (which it generally is) even before it is put in.

The method by which this topwork is carried out is often debated—one farmer prefers the hustler, another sticks to the old and commendable practice of skimming. If horses are the only source of power, then skimming must be done, as sore shoulders are the only result of working a stiff-tyned cultivator in grass land. If, however, a tractor is used, the question of skimming versus the hustler is more often determined by the land to be ploughed. Stubble land is best top-worked by the hustler. Where the pasture is run out to hair grass and catsear and is clean, skimming is probably the best.

Heavy turf consisting of pasture or old browntop is best done with the hustler, but full use must be made of the various widths of points which can be obtained for such implements. The land should be given one or two strokes with the narrow points and then followed by the wider ones. If wide points are used first, the turf tends to roll off in large pieces, and it is impossible to break them down. If the land has been skimmed, further cultivation is necessary, and where the turf is heavy it may be necessary to cross-plough before cultivation.

### *Depth to Plough*

When top-cultivation is carried out there is always the question of when and at what depth to deep plough. After the consideration of the type of soil, which, of course, determines the limit and the depth of ploughing, the other two points are crop and time. Some crops do quite well in raw soil, two of which are wheat and oats, and where these are to be sown, ploughing is often left to within a week or so of sowing. For the smaller spring-sown seeds, ploughing should be done as early as possible in order that the ultimate seed bed, that is, what will ultimately become the topsoil, may have time to weather. Early winter ploughing and lying in the furrow is, therefore, the ideal, the depth being determined by the earliness. Where the land cannot be deep ploughed through wet conditions or other causes, early shallower ploughing must be done, as there is less weathering time left. The ploughing should, however, always be sufficient to bury the turf to such a depth that it will not again be brought to the surface by the subsequent work.

This timely and sufficient cultivation is the foundation of the crop. There is nothing new in it. Every man on the land today realises that the only way to get a crop of anything is to carry out cultivation early, thoroughly decay turf or the remains of the previous crop for plant food, and, above all, conserve moisture. Yet, how few do it! How much of the 400,000 acres of rape, swedes, and turnips to be planted for the next season's use is now in the furrow? And that is where it should be at this stage if failures are to be avoided.


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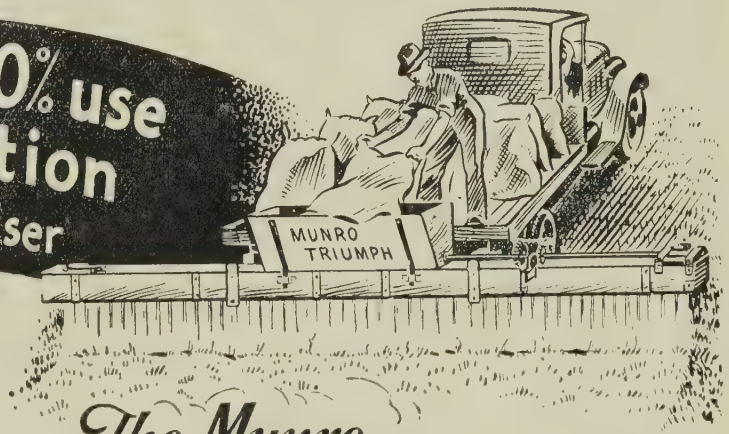


The advice of Mr I. L. Elliott, Supervisor of Fertiliser Supplies, on how to obtain the best results from top-dressing with the limited supplies of super now available, given in the July issue of The Journal of Agriculture, is sound and timely, and will be welcomed by hundreds of farmers. (1) "Use the restricted quantities on your best pastures—in general, those well supplied with clovers." (2) "Employ good grazing technique, making most efficient use of pasture growth." (3) "Ensure that the pasture is in the best condition to apply fertiliser." Finally, he

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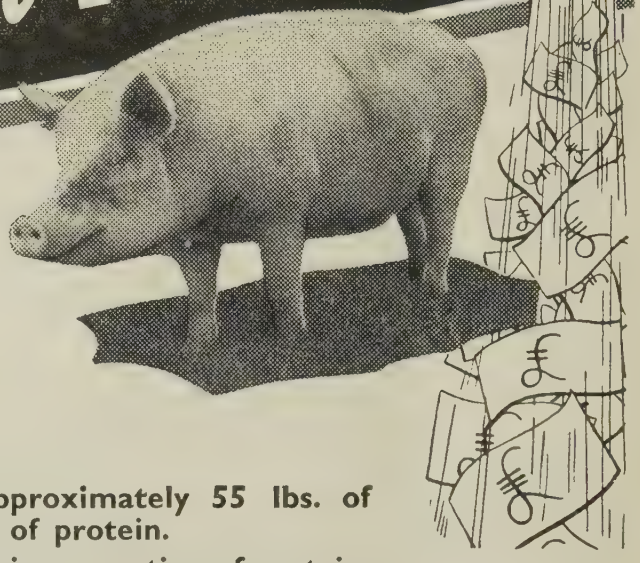

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# TOMOANA MEAT MEALS

# Which Is The Best Baconer?

## Report for Third Season of Carcass Quality Scheme

By M. J. SCOTT,
Superintendent of the Pig Industry, Wellington.

THE pig carcass quality scheme was instituted in 1938 to find an answer to the question so frequently asked, "Which is the best type of bacon pig?" At first sight this question means to some only whether one of the breeds, Berkshires, Large Whites, Tamworths, or Large Black, is better than all the others, but as every breed is crossed with every other breed according to someone's fancy, the question involves not only the four pure breeds, but also all these various crosses which can be obtained from them.

A few minutes with a pencil and paper will make it clear that, in addition to the four purebreeds, there are six first cross halfbreds, and as each one of these six halfbreds may be put back to any of the four breeds of boar to give either a distinctive three-quarter breed or else a pig containing three breeds—for example, Large White x Berkshire x Tamworth—there can be twenty-four more kinds of pigs. Many of these three-quarter bred and mixed breed sows are used for breeding purposes, and as the identity of their progeny by a boar of defined breed is not usually obvious, these can be classed as grades. Thus, there is a total of four purebreds, six halfbreds, twenty-four three-quarter or mixed breeds, and four grades, that is, 38 classes of pigs that can be produced from four pure breeds. If the reciprocal crosses are looked upon as being distinct in each case, the number of possible kinds of pigs is increased considerably.

Lest confusion should arise about the meaning of "purebred" as used here, it is meant to include all animals that are known to be of only one breed. When tattooed, registered pedigree animals are classed as "registered pedigrees," but for the present they are included in the wider class of purebreds.

### *Measurement of Carcass Quality*

In this survey, carcass quality has been measured by the total points awarded for rate of growth, length of carcass, thickness of back fat at the shoulder, and thickness of back fat at the loin. Quick growth is by far the most important feature of a good baconer. The rate of growth controls the amount of feed and the labour required to produce a carcass. Quick growers require less feed per pound of carcass gain than slow growers, and for this reason a maximum of 80 points is awarded for growth rate. In awarding points for growth rate the Canadian "maturity index" has been used, that is, standard age divided by actual age, multiplied by 80. A maximum of 20 points has been allowed each for length and shoulder fat, and a maximum of 12 points for loin fat. The standards recommended by the Bacon Development Board (United Kingdom), slightly modified, have been used in awarding points for these three measurements.

Altogether, 1,550 pigs have been reported on during the three years of operation of this scheme. In order to smooth out differences due to strains within the breeds, the month of birth, climate, and ways of feeding and treatment, it is estimated that at least 500 pigs are required in any one class.


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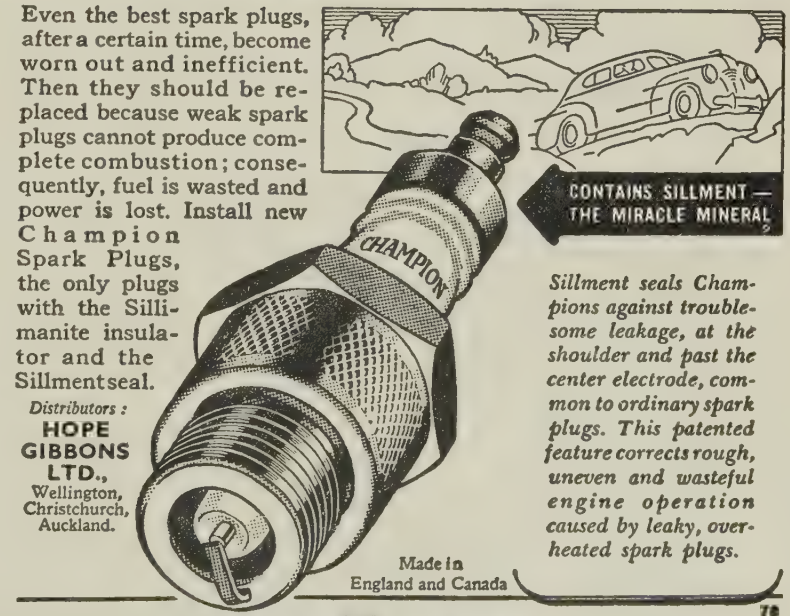


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Naturally, there is no single breed class in which this number has been examined, and it is therefore impossible at present to make any statement about the merits or otherwise of any one breed or cross.

Even when pigs are grouped into wide general classes containing quite large numbers, the information from this small number of pigs is not dependable because of the variation between the smaller groups making up the class. One of the first general questions to answer, therefore, is whether purebred pigs, halfbreds, or mixed breeds make the best baconers. Purebreds score a total of 111 points, 69 for maturity, 20 for back fat, 12 for loin, and 10 for length; half and three-quarter breds score 110 points (69, 19, 12, and 10), and mixed and grade score 109 (66, 20, 12, and 11). This would be one of the most useful contributions to our knowledge of pigs if it were dependable, but the purbred score is made up of Berkshires, 106 points, Large Blacks, 108 points; Large White, 116 points; and Tamworths, 112 points. None of these averages is dependable, as the biggest group, the Tamworths, is made up of only 154 pigs.

It will be a red-letter day for the industry when the measurements of a sufficiently large number of pigs make it possible to say definitely that purebreds, halfbreds, or mixed breeds make the best baconers. Most farmers believe in hybrid vigour, but few have sufficiently convincing proof to make the practice of producing baconers from mixed breeds generally accepted.

### *Breed of Boar*

A further grouping has been made of pigs by breed of boar used. Grouped in this way, there are 768 pigs from Tamworth boars by every kind of sow, 243 by Large Whites, 437 by Berkshires, and 97 by Large Black boars. Tamworth crosses score 112 (70, 20, 12, 10); Large Whites, 109 (68, 19, 12, 10); Berkshires, 107 (66, 20, 12, 9); and Large Blacks, 106 (65, 19, 12, 10) points respectively. If the differences were dependable—that is, if the results were obtained from very large numbers of pigs, they would be of considerable interest. The difference between Tamworth crosses (70 points for growth rate) and Berkshire crosses (66 points) means that Tamworth crosses reach 140 lb. at least two weeks sooner than Berkshires. If this were true it would mean that the generally held opinions that Berkshires are hardy and that Tamworths are hungry would require reconsideration.

In general, all pigs so far examined leave little to be desired for back fat thicknesses. Loin fat is inclined to be too thin on all pigs of 101 to 120 lb., but especially on the Large White crosses. Shoulder fat is inclined to be too thick in all pigs in the weight range 161 to 180 lb. Length is uniformly mediocre, and all crosses and all weights score only half marks when judged by the standard set by the United Kingdom Bacon Development Board's scheme. At any weight one point for length corresponds to 3-16th of an inch, so that on their standards our pigs are uniformly just under 2 inches shorter than the perfect pig.

The great failing in all pigs is the rate of growth. Pigs of 118 lb. average carcass weight are 46 days older than schedule; pigs average 132 lb., 44 days; pigs of 150 lb., 32 days; and pigs of 168 lb., 29 days. The standard of growth adopted may be too fast (142 lb. of carcass in 28 weeks), but it is a


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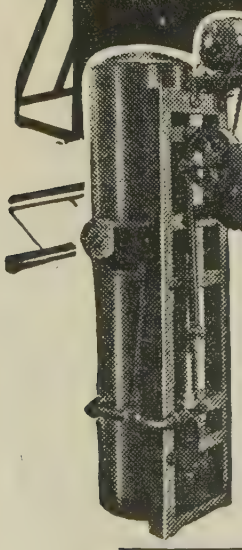

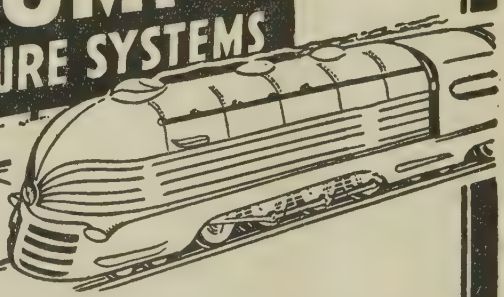

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performance that most pigs can do, and an ideal at which most bacon producers aim. The heavyweight pigs are usually produced when there is plenty of feed, and in the last stages get an opportunity of making up for lost time. On the other hand, light pigs are sold when the feed supply is failing, and do not get any opportunity of making up for the store period they have come through. These circumstances are unavoidable.

### *Influence of Month of Birth*

When pigs are arranged in groups by the month in which they are born a most unexpected result is obtained. Pigs born in January, February, and March are 60 days older than schedule; born in April, May, June, 23 days older; born in July, August, September, 29 days older; and born in November, December, January, they are only 10 days older than schedule in reaching average bacon weights of 140 lb. This result is in close agreement with the findings published in the "Journal" in December, 1940, that for bacon production the best use could be made of feed when sows farrowed in May, June, July, and again in November, December, January.

If the influence of month of birth on rate of growth can be established beyond doubt—and that is possible only by the examination of a very large number of pigs—then at least six weeks can be cut off the life of many baconers merely by changing the month of farrowing. The value of such a saving to the industry will bear thinking about. In the past, all the attention has been given to getting longer pigs and pigs that will grade better, improvements for which the farmer gets an indirect and almost invisible advantage. Attention given to rate of growth provides a benefit in which no one but the owner participates; the reward is in keeping with the effort spent. Having feed at the right time and proper attention are still the most important factors in getting rapid growth and maximum returns from pigs.

After a sufficiently large number of pigs has been examined it will be possible to give definite information on the points discussed above and reliable answers to many questions now asked by farmers. Only by the active co-operation of farmers will it be possible to get the number of pigs required. Farmers are asked to get in touch with supervisors and have their baconers, whatever the breed or strain, tattooed for carcass evaluation. The service costs nothing, and the only obligation on the farmer is to supply the correct date of birth and the breed of sire and dam used. These two pieces of information are the foundations on which the scheme is built. Neither the age nor breed of a pig can be ascertained from an examination of the carcass; otherwise it would be possible to get all the pigs required in a couple of months at any export slaughterhouse.


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# Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the four months, May-August, 1941, have been compiled by the Livestock Division:—

| District | Cattle | Calves | Sheep | Of which Ewes were | Lambs | Swine |
|---|---|---|---|---|---|---|
| **North Island.** | | | | | | |
| Meat Export Slaughterhouses— | | | | | | |
| Auckland .. .. .. | 75,449 | 351,427 | 37,240 | 14,865 | 140,761 | 69,341 |
| Poverty Bay-Hawke's Bay | 29,748 | 28,376 | 34,780 | 5,384 | 218,373 | 7,882 |
| Taranaki-Manawatu .. | 38,217 | 126,213 | 10,679 | 1,440 | 144,705 | 33,382 |
| Wairarapa-Wellington .. | 22,860 | 14,032 | 22,402 | 4,664 | 128,467 | 6,580 |
| Totals .. .. .. | 166,274 | 520,048 | 105,101 | 26,353 | 632,306 | 117,185 |
| Abattoirs .. .. .. | 41,661 | 14,768 | 169,914 | 86,237 | 18,538 | 39,051 |
| North Island Totals .. | 207,935 | 534,816 | 275,015 | 112,590 | 650,844 | 156,236 |
| **South Island.** | | | | | | |
| Meat Export Slaughterhouses— | | | | | | |
| Nelson-Marlborough .. | 681 | 3,024 | 11,214 | 5,937 | 70,906 | 3,490 |
| Canterbury .. .. | 4,476 | 8,743 | 158,577 | 125,427 | 387,758 | 9,197 |
| Otago-Southland .. .. | 3,582 | 1,935 | 139,120 | 129,060 | 467,204 | 2,268 |
| Totals .. .. .. | 8,739 | 13,702 | 308,911 | 260,424 | 925,868 | 14,955 |
| Abattoirs .. .. .. | 19,233 | 4,058 | 91,400 | 51,304 | 8,754 | 15,277 |
| South Island Totals .. | 27,972 | 17,760 | 400,311 | 311,728 | 934,622 | 30,232 |
| **Dominion.** | | | | | | |
| Meat-expt. Slaughterhouses | 175,013 | 533,750 | 414,012 | 286,777 | 1,558,174 | 132,140 |
| Abattoirs .. .. .. | 60,894 | 18,826 | 261,314 | 137,541 | 27,292 | 54,328 |
| Grand Totals .. .. | 235,907 | 552,576 | 675,326 | 424,318 | 1,585,466 | 186,468 |
| Same Period, 1940— Meat Export Slaughterhouses and Abattoirs .. | 283,857 | 536,480 | 944,108 | 605,275 | 1,439,235 | 176,687 |
| Same Period, 1939— Meat Export Slaughterhouses and Abattoirs .. | 221,226 | 534,095 | 678,554 | 362,642 | 1,496,955 | 129,954 |

# Slaughterings of Pigs

The 21,890 pigs slaughtered in meat-export slaughterhouses and abattoirs during August were distributed in weight ranges approximately as follows:—

| | |
|---|---|
| Under 60 lb. .. .. .. .. | 365 |
| 60-120 lb. .. .. .. .. | 14,524 |
| 121-160 lb. .. .. .. .. | 4,011 |
| 161-180 lb. .. .. .. .. | 466 |
| Over 180 lb. .. .. .. | 715 |
| Sundries .. .. .. .. | 1,809 |

The grading of porkers is 86 per cent. of first quality and 14 per cent. of second quality, and the grading of baconers is 75 per cent. of prime 1's, 20 per cent. of prime 2's, and 5 per cent. of second quality.

In the different weight ranges of baconers, the grading is as follows:—

121-160 lb. .. .. .. .. .. 76%, 19%, 5% of P1, P2, and 2nds respectively.
161-180 lb. .. .. .. .. .. 59%, 28%, 13% of P1, P2, and 2nds respectively.

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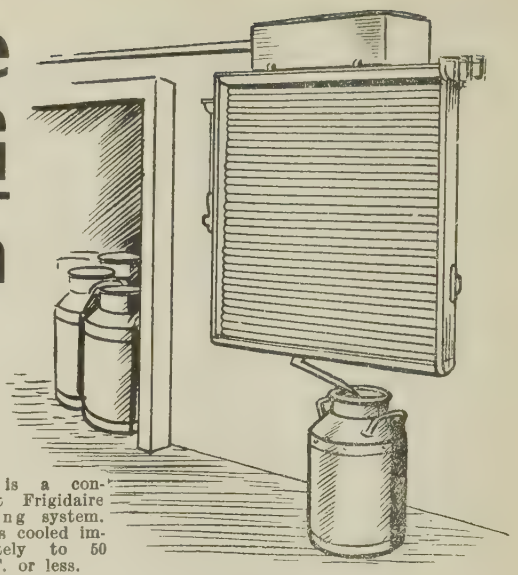

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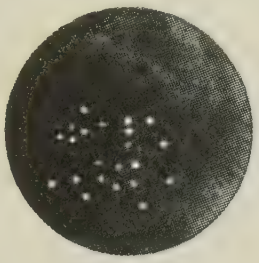

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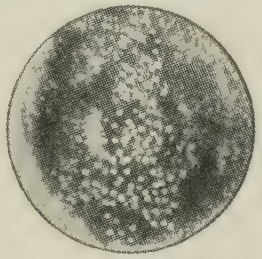

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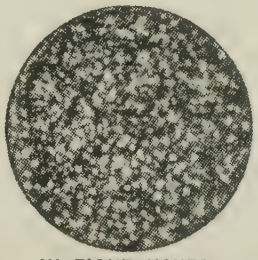

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*The Question is*

# Why Waste Time With "Taranaki" Gates?

*By*
*N. E. BRITTON*
*Okaihau, Auckland.*

WHY a district of such bounteous production as Taranaki should be nominally fathered, or should one say mothered, with one of man's most wasteful and slovenly devices—the "Taranaki" gate—is hard to understand. Surely the first wire gate was used and sworn at in an older world long before Taranaki found a home for our early pioneers.

In any case, these hardy forefathers of ours under Egmont's shadow probably had no wire which might suggest the invention of this contrivance of the devil. The worst they could do with the means at their disposal was to put slip-rails across the gateways; no very satisfactory method in truth, but at least many degrees better than the abomination previously mentioned.

And, lest it be thought that such forceful language is unjustified, let us consider what a wire gate costs in point of time without allowing for wasted energy, torn flesh, lacerated feelings, and exploded temper.

## *Wire Gates Waste Time*

The average time occupied in opening and closing a wire gate is perhaps not less than ten seconds, and if the gate is used half a dozen times a day an expert mathematician, with his slide rule and logarithmic tables, will prove that in the course of a year about six hours of working time, or, for a dairy farmer, one full day between milkings, is spent in opening and shutting that one gate. If there are several such gates on a farm, the drag on economic operation is really serious.

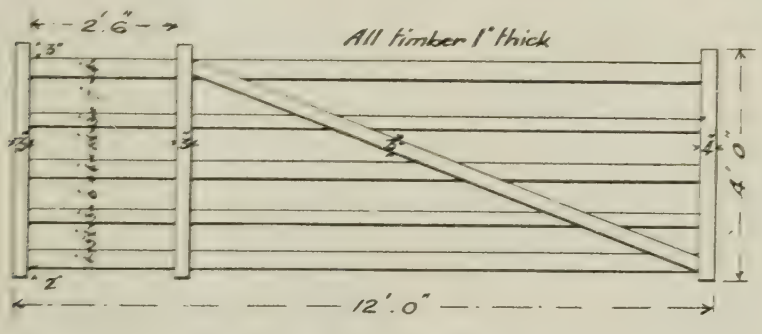
In addition to this waste of time when passing through wire gates there is also to be considered the time spent on repairs, for these gates are particularly susceptible to disintegration, and their average life is undoubtedly very short.

Why, then, are they so popular? Or perhaps it would be more accurate to ask why they are so commonly made use of, for it is hardly to be supposed that they are popular even with their creators.

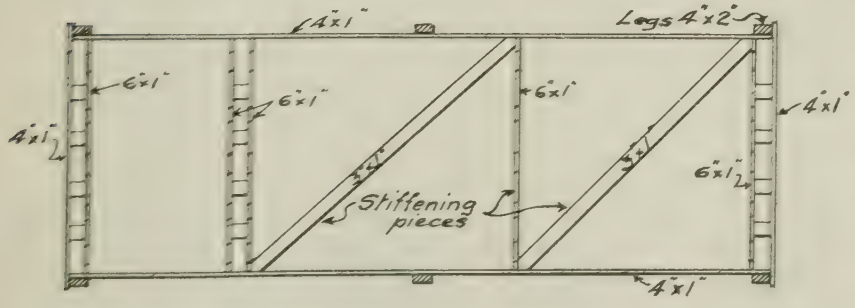
The answer, of course, is twofold, "apparent low cost and apparent rapid construction"; but these impressions are and can be shown to be entirely mistaken.

## *Wire Gates Are Expensive*

The first cost of these so-called gates may be small, but when a price is




*Details of 12'.0" gate.*

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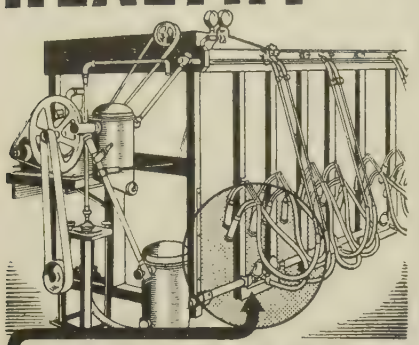

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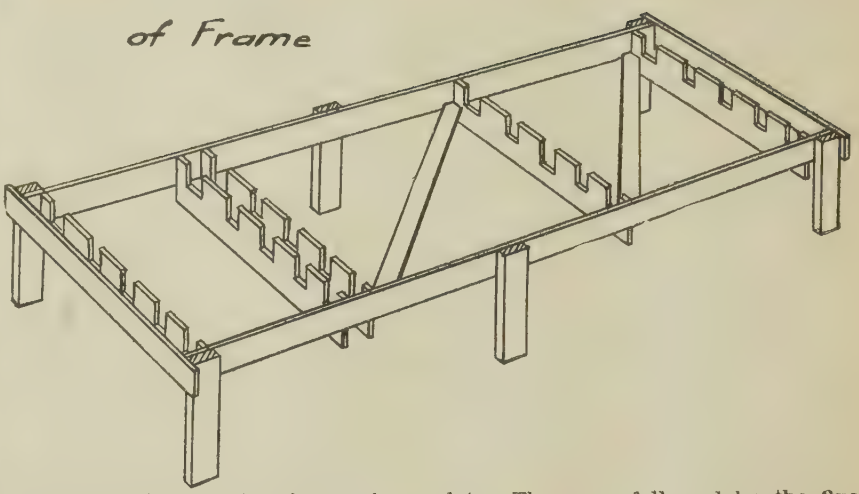
Another view of Frame



put on the time wasted in manipulating and repairing them, as mentioned previously, their cost is remarkably high, and the time taken to make one is actually no less than that required to make a good, permanent, five-barred hinged gate if the system of building gates in a frame is adopted.

The making of a suitable frame is comparatively simple, but it necessarily and fortunately involves standardising the size and pattern of all gates on the farm.

The first step, therefore, is to decide what width the gates shall be made, and as a wide gate costs only slghtly more than a narrow one and is much more convenient for the passage of lorries and large implements, nothing less than a 10ft. gate should be made, and a still wider one of 12ft. is recommended.

### *Construction Of Gate*

The detailed measurements of such a gate are shown in the accompanying illustration, while the frame in which the gates are made is shown as it appears from two different angles, and requires very little explanation.

The length of the legs of the frame is such that the frame is of a convenient height for sawing, say about 18in. above the ground, and every part of the frame should be made not less than a quarter of an inch "full" so that there is sufficient play to allow the finished gate to drop freely from the frame.

The frame is placed alongside the stack of timber to be used, and three stiles and one diagonal are then cut to length and placed in their appropriate slots. These are followed by the five rails, and finally by the three remaining stiles and one diagonal.

Holes are then bored at all intersections, and bolts which have been well greased inserted. The whole thing is then turned up on its side, washers put on, and nuts screwed up hand-tight. Another turn over and the gate drops out on to the ground completed except for tightening up the nuts with a spanner.

The hinges can be attached while the gate is in the frame, and a first-class job is assured if all timber is painted at intersections before being placed in the frame. If this is done the final painting of the whole gate is not necessary and remains a matter for individual taste by those who like a neat appearance.

## List of Creameries

BECAUSE of the shortage of paper supplies, the "Annual List of Creameries, Factories, Private Dairies and Packing Houses" will not be printed for 1941, but a schedule of amendments necessary to bring the 1940 list up to date to March 31, 1941, has been prepared and is available free of charge on application.

Copies of the 1940 list are still available, and will be supplied with the amendment schedule at 2/- per copy. Applications should be addressed to the Publisher, Department of Agriculture, Wellington.

**FARM LIGHTING BATTERIES**
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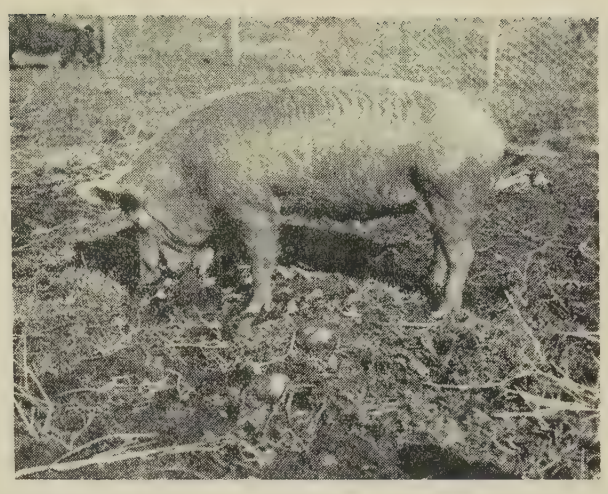
# "What Crops Can I Grow for the Pigs?"



*Following Great Britain's increased order for bacon, which was announced last month, many farmers will be asking, "What crops can I grow for the pigs?" Root crops will in most cases be the logical answer, and an outline of the merits of various crops is given in this article.*

— By —
D. M. E. MERRY,
Instructor in Agriculture, Nelson.

THE final choice of what root crop to grow must depend largely on soil fertility, availability of labour for cultural operations, and climatic conditions. While the crops under discussion in this article are intended principally as a guide to what might be grown, more detailed information will be available in any locality from the local Instructor in Agriculture.

Briefly, points favouring good root crops may be summarised as follows:—

(1) Heavy crop and dry-matter yields per acre—root crops can suitably supply the bulk of the pig's rations.

(2) Less need for large purchases of concentrates or other feedstuffs.

(3) Ability to make full use of skim-milk, rejected fruit, or other food wastes.

On the debit side of the food account labour costs must be reckoned, as also the need for balancing up the root ration with other protein-rich supplements.

## *Importance of Dry Matter Yield*

As an illustration of the importance of high dry-matter yield per acre, mangolds may be compared in their dry-matter production with that of a commonly fed cereal, barley. An average 40-ton crop of mangolds (dry-matter 13 per cent.) will produce 104 cwt. of dry-matter per acre compared with 14 cwt. from a 40 bushel crop of barley (dry-matter 86 per cent.). Although the mangold crop is capable of producing very much more dry material from the same area than a cereal crop, there are vast differences in feeding qualities.

Just as the performance of your car depends on the correct petrol-air mixture, so also will growing pigs make most headway with a suitably-balanced diet of carbohydrate and protein. In general, root crops are over carbohydrate-rich, whereas some grain, and particularly lucerne, pea-meal, or linseed meals, are over protein-rich. Hence the necessity for feeding such concentrates along with root crops, which provide the bulk of the ration.

As an indication of the area which should be set aside for cropping, it has been stated that one acre of good crops should be provided for every 30 cows milked, or an allowance of 2½ tons per cow plus 10 tons for every ton of grain bought. In non-dairying districts otherwise waste foodstuff, or reject apples in fruit-growing centres, may be profitably converted to pig-flesh with the assistance of home-grown root crops.

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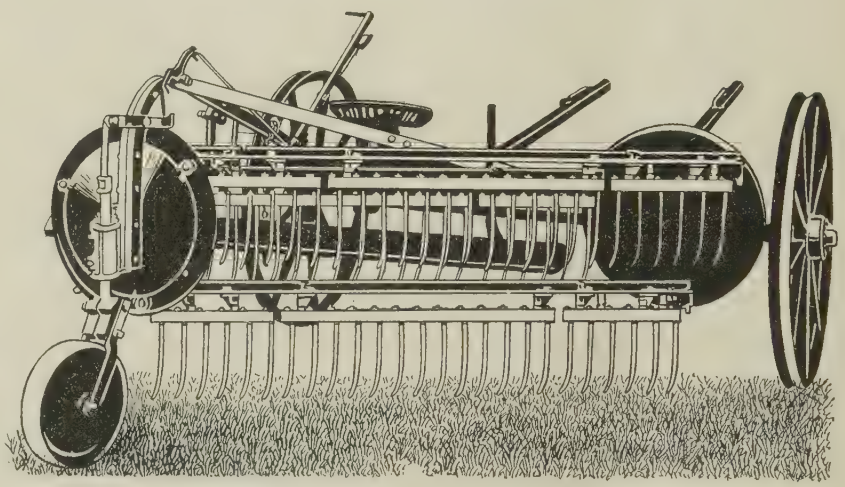

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### *Factors Influencing Yields*

In wet districts it is usual for roots to have a lower dry-matter content than in drier districts. Again, soil fertility, stage of maturity, and the variety all have an effect on dry-matter yields. From the practical point of view, best returns are obtained from fully-matured crops grown in not over-wet soils.

### *Mangolds*

If suitably grown, mangolds will outyield practically any other farm crop. Their added virtues are their keeping qualities, especially if "pitted" or "clamped," and their high favour with livestock. The Yellow Globe and Tankard varieties are perhaps the more generally suitable, particularly as they grow wholly or party above ground and are less likely to be checked by weeds in the later stages of growth. Yields of 40 tons or more per acre are not uncommon.

Mangolds are, however, low in protein and lime, a factor which adds to the need for feeding them along with other supplements of higher protein content. While turnips and swedes are suitable for early season feeding, mangolds may be used throughout the winter to early spring.

### *Swedes and Turnips*

The swede and turnip crops are widely favoured for pig feeding. Swedes have a dry-content of approximately 11.5 per cent. and turnips 8.5 per cent. A 35-ton crop of swedes will thus provide about 80 cwt. of dry-matter per acre, and turnips 59 cwt. From the feeding point of view, swedes are the better, and they are also considerably richer in protein. Although slower to mature than turnips, swedes are better keepers, and can be fed in the later season.

### *Carrots*

Carrots are not so extensively grown as swedes, although they, too, are of excellent feeding value. The attention and labour necessary to ensure high crop yields, together with the difficulty of lifting the deeply-rooted varieties, are prejudicial to their more widespread usage for pigs.

The carrot has a dry-matter analysis of 13 per cent., and an average 35-ton crop would yield 91 cwt. dry-matter per acre. While higher in dry-matter than swedes, carrots are slightly lower in protein value. If clamped, they keep well.

### *Sugar Beet*

Sugar beet is increasing in favour, and contains approximately 23 per cent. dry-matter, of which 16 to 17 per cent. is sugar. Excellent feeding results have been obtained with the crop, but unless climatic and soil conditions are particularly suitable it will probably pay best to grow mangolds.

A 20-ton crop of sugar beet will produce 92 cwt. dry-matter per acre. Sugar beet, if clamped, will keep as well as, if not better than, mangolds, and is eagerly sought after by stock.

### *Potatoes*

If grown specially for pigs, potatoes compare unfavourably in production costs with the crops already described. In Canterbury, where practically 60 per cent. of the Dominion's potatoes are grown, about 15 per cent. of the tubers are selected for seed, leaving 10 per cent. for pig feeding. In years when potatoes are cheap the "chats" can be profitably bought for this purpose.

The potato is rich in carbohydrate, and has a dry-matter content of 25 per cent., of which 18 per cent. is carbohydrate. The average New Zealand yield is 5 tons per acre, although considerably higher yields than this are often obtainable.

### *Artichokes*

The artichoke is an excellent pig crop, especially if the tubers are planted in an otherwise unused corner where they can be left to grow over a period of years. They must not be fed until the tops have died down, and then only with discretion; otherwise no "seed" will be left for succeeding year's crop.

Artichokes have a dry-matter content of approximately 20 per cent., and yield about 12 tons per acre. They are a palatable and nutritious feed.

### *Pumpkins and Stock Melons*

In the warmer districts pumpkins and stock melons will be a valuable addition to root crops. They are of high feeding value. Their dry-matter content is about 15 per cent., and while yields per acre are often matters of debate, an average figure is 35 tons. They can be grown through maize, although the highest yields are obtained when they are grown as a special crop.

It is not proposed to discuss the growing of cereal crops, peas, or maize specially for pigs. Peas are nevertheless one of the most valued of leguminous crops for feeding with roots because of their high protein content. The time-old adage, "It is not always wise to have all your eggs in the one basket," still holds in growing root crops for pigs. Several suitable crops are usually to be preferred to the whole area in the one crop. Again, the value of green feed, particularly in the form of pasture or young lucerne, must not be overlooked. It has been estimated that pasture can supply up to 15 per cent. of the pig's feed requirements; therefore, good clover-ryegrass swards are of material advantage.

Finally, however, it should be borne in mind that pigs are most profitable where quick live-weight gains can be made. This necessitates the wise feeding of a suitably-balanced ration, including pasture, roots, and concentrates, with any other cheap or waste feedstuffs available.

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# Grading of Export Butter and Cheese

## Leading Dairy Factory Averages for 1940-41

Contributed by the DAIRY DIVISION.

BUTTER-MANUFACTURING companies which have obtained an average grade of 94 points or over and cheese-manufacturing companies which have obtained an average grade of 93 points or over are listed below.

Of the total 150 creameries or dual-plant factories manufacturing butter for export, 28 are included in the list as compared with 30 for the previous year, and of the 280 cheese factories and dual-plant factories manufacturing cheese for export, 10, as compared with 11 for the previous year, have averaged 93 points or over.

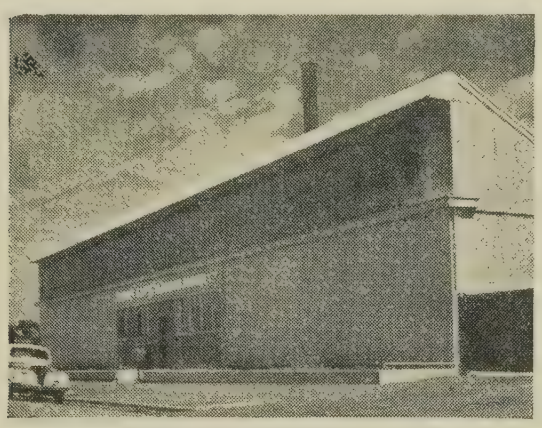
Of the total factories listed, 19 butter and five cheese factories are situated in the North Island, and nine butter and five cheese factories in the South Island.

### BUTTER.

| Company or Proprietor. | Regd. No. | Brand. | Tonnage Graded. | Ave. Grade. |
|---|---|---|---|---|
| Murchison | 1,888 | Airship | 240 | 94.648 |
| Rangiwahia | 750 | Quail | 24 | 94.641 |
| United | 1,296 | Whariti | 127 | 94.562 |
| Konini | 1,203 | Konini | 261 | 94.445 |
| Rangitikei | 1,360 | Rangitikei | 214 | 94.438 |
| Collingwood | 1,254 | Golden Hills | 207 | 94.429 |
| Rata | 938 | Rata | 711 | 94.416 |
| Kuku Manakau | 905 | Ohau | 336 | 94.379 |
| Inter-Wanganui | 6 | Inter-Wanganui | 141 | 94.375 |
| Awahuri | 664 | Red Rose | 872 | 94.354 |
| Levin | 910 | Lake | 1,100 | 94.331 |
| Wairoa | 1,345 | Wairoa | 302 | 94.303 |
| Rodney | 394 | Rodney | 745 | 94.300 |
| Kaikoura | 302 | Kai | 262 | 94.281 |
| Westland | 145 | Westland | 284 | 94.265 |
| Golden Bay | 146 | Sovereign | 748 | 94.263 |
| Arahura | 1,516 | Arahura | 32 | 94.158 |
| Karamea | 1,570 | Karamea | 220 | 94.145 |
| Mauriceville | 14 | Mauriceville | 569 | 94.098 |
| Shannon | 1,489 | Shannon | 1,004 | 94.076 |
| Golden Coast | 991 | Golden Coast | 193 | 94.070 |
| Tolaga Bay | 1,007 | Tolaga Bay | 243 | 94.051 |
| Wangaehu | 1,326 | Wangaehu | 541 | 94.049 |
| Hawera | 346 | Great Hope | 227 | 94.041 |
| Taihape | 1,188 | Tikapu | 293 | 94.041 |
| Kia Ora | 926 | Kia Ora | 1,142 | 94.039 |
| Eketahuna | 46 | Eketahuna | 113 | 94.005 |
| Bell Block | 488 | Bell Block | 11 | 94.000 |

### CHEESE.

| Company or Proprietor | Regd. No. | Brand. | Tonnage Graded. | Ave. Grade. |
|---|---|---|---|---|
| Orari | 254 | Orari | 226 | 93.576 |
| Kaimata | 992 | The Oaks | 598 | 93.503 |
| Stirling | 292 | Stirling | 186 | 93.460 |
| Cloverlea | 64 | Cloverlea | 133 | 93.338 |
| Brydone | 1,821 | Brydone | 305 | 93.260 |
| Bell Block | 488 | Bell Block | 701 | 93.242 |
| Cardiff | 10 | Cardiff | 719 | 93.115 |
| Kaponga | 1,696 | Rowan | 415 | 93.025 |
| Okain's Bay | 239 | Okain's Bay | 215 | 93.024 |
| Kahui | 493 | Kahui | 302 | 93.004 |

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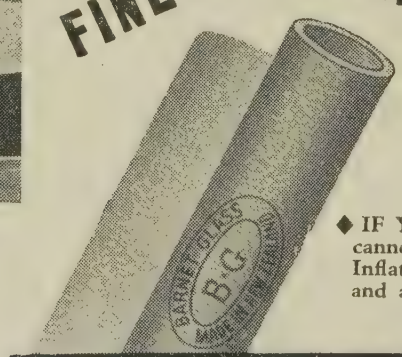


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# ERADICATION OF HARD FERN

*Experiments in the Southern King Country show that hard fern can be eradicated, and that many areas at present occupied by this pest can carry good productive pastures. Thorough burning is necessary, together with reseeding with a suitable grass seed mixture, followed by topdressing and good pasture management. Heavy stocking with run catle is also essential for at least the first twelve months to crush out any surviving fern.*

By

*W. T. BROWN, Fields Instructor, Taumarunui.*

## Successful Experimental Work In King Country

ONE of the first plants to invade grass land in most reverted country is hard fern. This fern, which is known by various local names, such as ring fern, silver fern, carpet fern, and, mistakenly, as water fern, usually appears first on the cold, damp faces lying away from the sun, but may also appear on dry, sunny faces.

This fern covers large areas of hill country, and causes considerable loss to farmers. Some farmers have been reasonably successful in combating this pest, but many have failed to make any headway against the gradual spread of the hard fern.

The fern, which is a surface-rooting plant, is very difficult to eradicate, and although burning has been practised for a number of years, it has proved only a partial success, and the usual result was a regrowth of the fern patch in the form of a ring, leading to the name ring fern.

From the surface-rooting habit of the plant, it is apparent that if it is to be attacked by fire it is necessary to burn the area when the ground is dry and also when there is a reasonable amount of dead leaves to carry the fire and produce a good heat, thus destroying most of the roots.

### *Earlier Experiments*

Earlier experiments with hard fern were carried out in the Whangamomona County, and proved that hard fern can be controlled by spraying with one part by weight of arsenic pentoxide and 320 parts of water.

This may seem a reasonable method of eradication, but when it is remembered that all water has to be packed up the steepest and most inaccessible parts of the farm it is not surprising that this method of destruction found little favour with farmers.

### *Recent Experiments*

In 1938 experiments were planned to discover a cheaper, easier, and more practical method of destroying the hard fern and regrassing the reverted areas.

A block of 15 acres on the property of Mr. D. F. McLeod, Opatu, was selected for the experiments, and as this was fairly evenly divided into five blocks by ridges, it was decided to try five different treatments, which are summarised as follows:—

1. Topdressing a block with superphosphate and grazing with run cattle.

2. Burning with a flame-thrower, reseeding, and topdressing.

3. Treating the hard fern with a 5 per cent. mixture of sodium chlorate and lime; later, when the fern had withered and dried, burning the patches with a flame-thrower, and sowing the burns with a suitable mixture of topdressing with superphosphate.

4. Burning the fern with a "firestick," reseeding, and topdressing. Treatments 1, 2, 3, and 4 are all applied in the autumn.

5. Burning with a flame-thrower in the spring and reseeding and topdressing.

After the first year all blocks were topdressed with 2cwt. per acre of superphosphate each autumn for two years, making three years' topdressing in all.

On Treatments 2, 3, 4, and 5, four plots, each consisting of one burned patch of fern, were pegged. These plots consisted of two good burns and two poor burns on each block, and were used to give a check on how the burns grassed and how they responded to the heavy grazing with run cattle.

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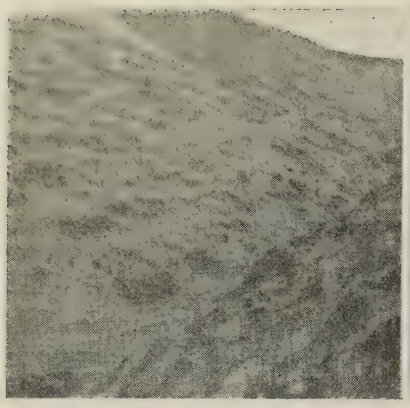

*Fig 1.*—Block 3 after treatment with sodium chlorate and lime. Note the severity of infestation.

*Fig. 2.*—Block 3 after treatment with the flame-thrower.

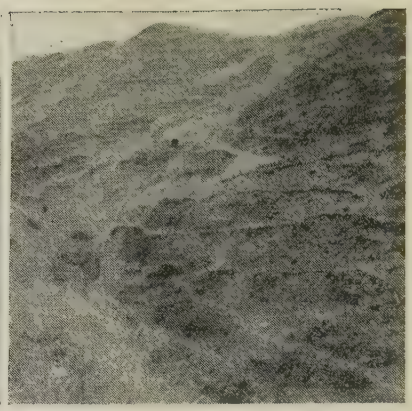

*Fig.*—Block 4 burned with a "fire-stick."

The grass seed mixture used for re-seeding the burns was:—

| | |
|---|---|
| Perennial ryegrass (certified) | 10lb. |
| Browntop | 2lb. |
| Crested dogstail | 4lb. |
| Danthonia | 2lb. |
| White clover (certified) | 2lb. |
| *Lotus major* | 1lb. |
| Total per acre | 21lb. |

This report is being written after the third year of treatment, and although there may be better results in the years to come, there may also be a decline because of the uncertainty of fertiliser supplies.

### Detailed Results.

#### *Block 1*

This block was topdressed with 2cwt. per acre of superphosphate each year in the autumn, and apart from the extra heavy stocking with cattle, no other treatment was given. The topdressings were applied on March 31, 1939, April 19, 1940, and April 7, 1941.

During the first two years, little change was noted, except that patches of fern did not spread. Stock grazed right up to the fern, but made no attempt to worry the patches. Since the third topdressing, however, the cattle have started to worry and trample the patches, but so far have made little impression.


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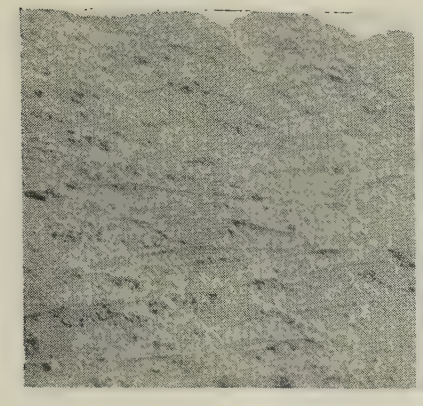

*Fig. 4.*—Block 3 six months after burning and sowing; little hard fern is present.

*Fig. 5.*—Block 4 six months after burning and sowing; good cover, but a little hard fern.

### *Block 2*

This block was burned with a flame-thrower and resown with grass seed on March 1, 1939, and 2cwt. of superphosphate was applied annually on the same dates as in Block 1. At the time of burning the ground was very dry, and a good, clean burn was obtained. The grass seed, although sown on very dry ground, gave a fairly satisfactory establishment, and with the rains later in the season gave good ground cover.

At the end of twelve months there was little hard fern to be found on the block, while after three years it is practically impossible to find the old burns. The only hard fern at present on this block is round the top of a slip which broke away in February, 1940. The hard fern on the pegged plots survived until after the second topdressing and then disappeared, and there has been no sign of any revival.

The heavy stocking with cattle was responsible for the disappearance of any fern which survived the fire, and the grass establishment has been good.

### *Block 3*

The hard fern on this block was first treated with a mixture of 28lb. of sodium chlorate and 5cwt. of lime per acre on February 27 and 28, 1939, and on March 8 and 9, 1939, was burned with a flame-thrower and sown with grass seed. Fertiliser was applied on the same dates, and at the same rate as in Block 1.

The ground was dry, and there was more dead and withered fern after the sodium chlorate treatment, and the burn on this block was the cleanest. The strike of grass and establisment was better than the other blocks, but after the second topdressing there appeared to be little difference between this and grass on Block 2. Hard fern on the pegged plots disappeared in the first year, and there has been no sign of any revival.

At the present time this block is carrying a good, even sward, and it is impossible to distinguish the burned patches from the rest of the sward.

### *Block 4*

This block was burned with a "fire-stick" and resown with grass seed on March 1, 1939. The ground was dry, and a fairly good burn resulted, although a fair amount of fern survived, most of it being in fringes on the lower edges of the patches. Fertiliser was applied as in Blocks 1, 2, and 3.


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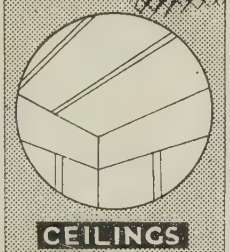


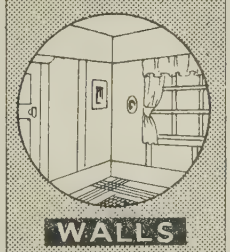


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*Fig. 6.*—Block 1 in 1940. Little improvement from topdressing only.

*Fig 7.*—Block 2 in 1940. No hard fern; no sign of burns.

*Fig. 8.*—Block 3 in 1940. No hard fern; no sign of burns.

The grass strike was only fair, but there was sufficient established to give a good cover. The cattle did exceptionally good work on this block, and although the burn was not as good as on Blocks 2 and 3, there was little difference between them at the end of twelve months. Practically all the fern disappeared after the second topdressing, and at the present time there is little difference between Blocks 2, 3, and 4.

Reports show that the fern persisted longer on the pegged plots than on any of the other autumn-burned areas, but the heavy stocking with cattle completed the destruction even on this block where the burn was not good.

## *Block 5*

This block was to be burned with a flame-thrower, reseeded, and topdressed in the spring, but the actual burning and topdressing was delayed until November 17, 1939, because of very wet conditions. When burned, the ground was very dry, but there was a fair amount of new growth, and the fires did not carry at all well. Much time was spent on the fringes and unburned edges, but it was impossible to get a clean burn.

The block was sown and topdressed, with a resulting fair strike, and the grass has made quite a fair cover on the burns.

Stock neglected this block after the treatment, and it was not until the following winter after the second topdressing of superphosphate on April 17, 1940, that the block was at all well grazed. Because of this neglect all the hard fern which survived the fire made good growth, and it was not until the winter of 1940 that the spread was checked with cattle. Bracken fern also appeared in the neglected pasture and made the block more unsightly. In the following spring the block was fairly well grazed, but it was not until the third topdressing that it was as well grazed as the others.

The result of this treatment is that the hard fern, although not covering such a large area as previously, is still well established over the whole area, but is now being held in check. There is no sign of the cattle damaging the remaining patches of fern. The newly-sown grass is not as strong as the grass on the other blocks, and the old pasture has not improved to the same extent as the pasture on the other areas.

This treatment has been a failure in comparison with the other burned areas, but if this area had been fenced off from the autumn-treated areas, the results might have been better. Even so, one could not recommend spring burning because of the difficulty in getting suitable weather or a clean burn when the fern is growing.

## *Conclusion*

From the information given in this experiment and also from observation of farming methods, it is quite evident that hard fern can be eradicated, and that many areas at present occupied by this pest could carry good productive pastures. The chief failing of past practice in the control of this pest has been, firstly, the overstocking of pastures with sheep and the understocking with run cattle.

Previously, farmers have either allowed the land to revert through the hard fern stage to bracken fern, and have then burned and reseeded the burn, or have burned the patches of hard fern and given little attention to the regrassing of the scars and the consequent stocking and topdressing.

Hard fern can be eradicated, and it would appear that the best method is to burn the patches of fern thoroughly in the autumn, reseed the burns with a suitable grass seed mixture, and follow up with topdressing and good pasture management. The heavy stocking with run cattle is essential for at least the first twelve months to crush out any surviving fern.

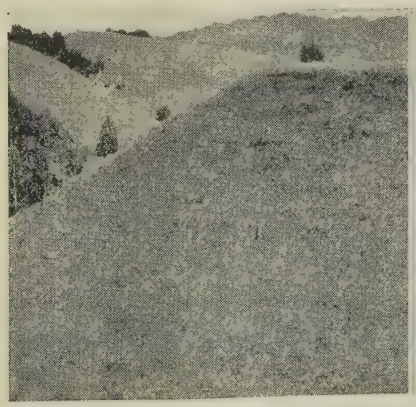


*Fig. 9.*—Block 4 in 1940. No hard fern; no sign of burns.

*Fig. 10.*—Block 5 in 1940. Bracken and hard fern present; some of the burned patches can still be distinguished.

# *No Apologies!*

By G. A. BLAKE, Instructor in Agriculture, Stratford.

## Were These Photos Taken On Your Farm?

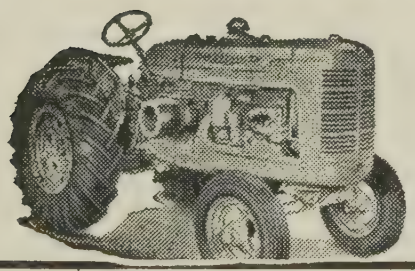
THE following illustrations depict scenes on many farms, and are unfortunately only too common. They will serve to draw your attention to those minor details which, in the aggregate, amount to serious loss. All photos are by the author. (No apologies are extended to the farmers on whose farms these photographs were obtained.)

That heap of stock yard manure, from which the elements are gradually leaching the fertilising value, is being wasted. Install a liquid manure outfit and turn this waste into grass.

That dirty gully infested with blackberry, ragwort and fern can be turned into a valuable asset by planting it with trees to provide shelter, posts and firewood.

That farm implement left under the hedge from one season to the next soon depreciates, and, when wanted, is not in a workable condition. Keep it in a shed.


# GOOD FARMERS CHOOSE McCORMICK-DEERING



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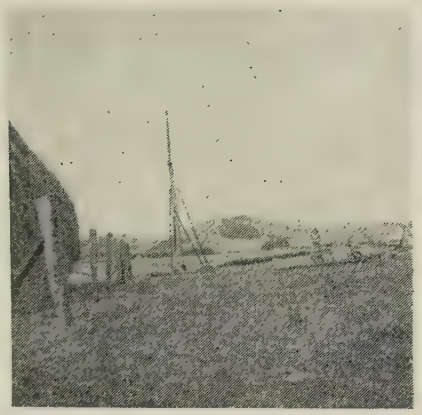
That broken hinge will soon allow this door to fall and probably get broken, resulting in a high replacement cost and damage to the contents of the shed.



That haymaking machinery left at the stack soon rots when the aftermath grows around it, and may be the cause of a serious accident.

That Lawsoniana hedge, through lack of double fencing, is damaged by stock, and its value as a windbreak and shelter belt is lost.

That lone ragwort plant, in full bloom, will soon produce enough seed to infest the whole paddock. Remove it in a sack, burn it, and save yourself future work.

That broken fence which allows stock to wander may result in dairy cows becoming a complete loss from torn teats and udders, and causes much loss of time.

That wire gate, probably erected temporarily, becomes a permanent fixture, resulting in loss of time and temper, and soon deteriorates beyond efficient use.

That muddy gateway, through which the herd is driven daily, results in chills to the udder, and is a predisposing cause of mastitis. Fill it up in dry weather and stop this loss.

That unfenced haystack, to which stock have access, is being wasted, and this limits the amount of feed available for the winter.

That wasted effort. In a few months this ensilage stack will be reduced to a manure heap, fit only to refill the hole dug to procure the weight for the stack.

# Pedigree Sow Records

Contributed by the LIVESTOCK DIVISION.

OF the 26 sows recorded for the quarter ended 31st August, 1941, 18 had litters sufficiently good to be included in one of the five grades set out below:—

| Grade. | Litter Weight. | |
|---|---|---|
| | At 3 Weeks. | At 8 Weeks. |
| 1 | 120 lb. | 360 lb. |
| 2 | 100 lb. | 300 lb. |
| 3 | 90 lb. | 270 lb. |
| 4 | 80 lb. | 240 lb. |
| 5 | 70 lb. | 210 lb. |

THE following table sets out the performance of each breed as an average for all sows recorded during the quarter:—

### Averages.

| Breed. | No. of Sows. | No. of Pigs per Litter. | | Litter Weight at | | Weight per Piglet. | |
|---|---|---|---|---|---|---|---|
| | | Born. | Weaned. | 3 weeks. | 8 weeks. | 3 weeks. | 8 weeks. |
| Berkshire .. | 17 | 10.7 | 8.5 | 91.2 | 286.3 | 10.7 | 33.6 |
| Large White .. | 2 | 10.0 | 8.5 | 104.0 | 294.5 | 12.2 | 34.6 |
| Tamworth .. | 7 | 8.7 | 7.4 | 90.7 | 263.1 | 10.4 | 30.2 |

In the following list the owner's name and address are given, followed by the herd book numbers of the sire and sow, the weights at three and eight weeks, the number of pigs born and weaned, and the grade of the litter.

### Berkshires.

| Owner's Name and Address. | Herd Book No. of— | | Litter Weight (lb.) | | No. of Pigs | | Grade of Litter |
|---|---|---|---|---|---|---|---|
| | Sire. | Dam. | 3 weeks. | 8 weeks. | Born | Weaned | |
| Burmeister, O. P., Kairanga R.D., Palmerston North | 12859 | 11671 | 50 | 144 | 10 | 4 | — |
| Dron, W. D., Hope R.M.D., Richmond, Nelson .. | 15328 | 11184 | 79 | 275 | 10 | 10 | 5 |
| Dron, W. D., Hope R.M.D., Richmond, Nelson .. | 15328 | 12322 | 81 | 273 | 14 | 9 | 4 |
| Dron, W. D., Hope R.M.D., Richmond, Nelson .. | 15328 | 14181 | 85 | 227 | 12 | 7 | 5 |
| Dron, W. D., Hope R.M.D., Richmond, Nelson .. | 15328 | 15348 | 99 | 317 | 14 | 10 | 3 |
| Duncan McLean, Ltd., Box 137, Greymouth .. .. | 12818 | 15324 | 97 | 412 | 10 | 10 | 3 |
| Ellerm, O. C., Sanson R.D., Palmerston North .. | 14949 | 15734 | 60 | 165 | 5 | 4 | — |
| Ellerm, O. C., Sanson R.D., Palmerston North .. | 14949 | 12708 | 112 | 386 | 11 | 11 | 2 |
| Haumoana Pig Club, c/o H. J. McKeesick, R.D., Haumoana, Napier .. .. .. .. .. | 15342 | 16163 | 134 | 423 | 14 | 12 | 1 |
| Jackson, Mrs. H. M., Ngaere .. .. .. .. | 15737 | 14314 | 121 | 365 | 9 | 9 | 1 |
| Manutuke Pig Club, c/o R. K. Hepburn, Manutuke, Gisborne .. .. .. .. .. | 13858 | 13606 | 49 | 169 | 8 | 7 | — |
| Patetonga Pig Club, c/o Roy McCullough, Patetonga R.D. | 15548 | 14851 | 115 | 311 | 10 | 8 | 2 |
| Rotomanu Pig Club, c/o H. E. Hodgkinson, Rotomanu, Westland .. .. .. .. .. .. | 15371 | 12798 | 119 | 311 | 12 | 8 | 2 |
| Rowlands, T. E., Ruthin R.M.D., Kaiapoi .. .. | 16715 | 11808 | 65 | 197 | 8 | 7 | — |
| Rowlands, T. E., Ruthin R.M.D., Kaiapoi .. .. | 16715 | 16325 | 88 | 208 | 13 | 9 | — |
| Stokes, N. W., R.M.D., Kaikoura .. .. .. | 15290 | 15813 | 108 | 315 | 10 | 10 | 2 |
| Te Kowhai Pig Club, c/o A. R. Gifford, Te Kowhai R.D. | 15147 | 12939 | 110 | 369 | 11 | 10 | 2 |

### Large Whites.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Norsewood Pig Club, c/o S. L. Merrick, R.D., Norsewood | 5510 | 5538 | 113 | 330 | 8 | 8 | 2 |
| Rowlands, T. E., Ruthin R.M.D., Kaiapoi .. .. | 5687 | 5241 | 95 | 259 | 12 | 9 | 4 |

### Tamworths.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ararimu Pig Club, c/o W. Allen Dunn, Rama Rama .. | 11202 | 10885 | 99 | 363 | 11 | 9 | 3 |
| Deck, G., Harakeke R.D., Upper Moutere, Nelson .. | 12060 | 12222 | 106 | 272 | 11 | 9 | 3 |
| Ellis, Norman, Geraldine R.D. .. .. .. .. | 11364 | 12412 | 125 | 373 | 9 | 9 | 1 |
| Fordell Pig Club, c/o A. P. Melville, Renagour, Fordell | 12197 | 12700 | 64 | 172 | 6 | 5 | — |
| Murchison Pig Club, c/o R. G. Thomson, Murchison .. | 11181 | 10317 | 46 | 104 | 7 | 4 | — |
| Te Arai Pig Club, c/o H. F. Robb, Manutuke, Gisborne | 12102 | 12697 | 84 | 205 | 8 | 7 | — |
| Win, R., R.M.D., Wakefield, Nelson .. .. .. | 11969 | 12583 | 102 | 353 | 9 | 9 | 2 |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# Choosing Land for a Market Garden

— By —

D. K. PRITCHARD,
Instructor in Vegetable Culture, Wellington.

ALTHOUGH success in market gardening depends largely on the individual, one of the most essential factors is the land itself. Those who are considering acquiring land for this purpose should therefore make the fullest investigation of the possible advantages and disadvantages of the land and the site before committing themselves to the venture.

### *Topography*

The "lay of the land" of any prospective site when the selection of land for a market garden is being made is important. Steep grades should be avoided, as the drainage on the ridges of this type of ground is too quick and permits the soil to dry out very rapidly. With constant cultivation such as is practised in market gardening, erosion is almost bound to occur, with a result that the top soil will eventually find its way to the gullies. This will take place more quickly than the land, even under the best practices, can be improved. Further, agricultural machinery is difficult to operate to best advantage on steep grades, and production costs will therefore invariably be higher than on flat or gently sloping land.

Gentle slopes with a northerly or north-easterly aspect in some locations are very favourable, as they induce air currents which may be some protection against frost. Because of the natural drainage usually present in such situations, the land will warm more quickly in spring, which would be an advantage in producing early crops for market. Level land, however, is generally chosen for the production of market garden crops, as it is more easily and more economically worked, and can, in many ways, be utilised to better advantage.

### *Soils*

Soils which are used for general agricultural purposes will, with the necessary treatment, produce good crops of most vegetables, but better soils will invariably give better results and over a longer period. Whatever the type of soil that is chosen, however, the drainage must be good.

Sandy soils have some advantages in crop production. They drain more quickly, and warm earlier in spring; sowing and planting can be started

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earlier and continued longer; ploughing and subsequent cultural operations are easier; the soil does not "set" hard; better root crops may be produced; and the temperature of such a soil will be higher during the growing season. Such soils will, of necessity, require heavier dressings of organic materials, such as farmyard manure and green crops, and more care both in the selection of commercial fertilisers best suited to the soil and crops to be grown on the land and in their composition and distribution. On such soils irrigation is necessary.

While swamp and peaty soils will produce good crops of all vegetables, they are particularly suited for growing celery and onions. They are rich in organic matter, and invariably require heavy liming. They must be adequately drained.

Silty loam soil is generally considered favourable for the production of main and late crops, and constitutes a good percentage of the soil on which vegetable crops are grown in New Zealand.

Heavy clay soils should be avoided for vegetable culture. If a soil is chosen which is deficient in organic matter, this condition can be remedied by growing green crops and ploughing them in. If it is intended to produce early crops, sandy soils are most suitable, while heavier soils will be best for main and late crops.

### *Climate*

It is sometimes possible to capitalise climatic advantages by growing early crops, which may be placed on a market at a period when growers less favourably situated are unable to compete. Cooler locations may be suitable for supplying late-maturing vegetables, particularly those of the brassica family, when harvesting in the warmer districts is finished. In colder situations vegetable pests are rarely as troublesome as in localities where winter conditions are not so severe or of long duration.

### *Water Supply*

The water supply should be thoroughly investigated before finalising any contract to purchase a property. Facilities for irrigation in some form are essential, and should be provided to ensure that the ground is maintained in an adequately moist condition, particularly during the period of crop growth. When it is considered that 27,000 gallons of water are necessary for the application of one inch of water to an acre of land, and that, with respect to some crops, this may be required several times during the growing season, it is evident that an abundant supply of water should be assured.

### *Cost of Supplies*

A small acreage conveniently situated to a cheap supply of stable manure might be preferred to a larger area on which it would be necessary to grow soil-improving green crops. The question of the cost of lime, manure, artificial fertilisers, and, indeed, all necessary supplies should be investigated, not in relation to where these might be purchased, but delivered on the garden. If the property is an inconvenient distance from rail and shipping facilities, the cost of transportation of these essentials might increase the cost beyond the point of profitable production.

### *Crops*

The crops it is intended to grow or in which it is intended to specialise will, in a great measure, be determined by the nature of the soil, the method of sale and distribution of produce, the available supply of labour and the extent to which the markets it is intended to supply are being met with vegetables of the kinds which the land is suited to grow. During the harvesting period of such crops as beans, peas, berries and tomatoes it may be necessary to employ additional labour. The amount of labour available will constitute a guide to the acreage which may be profitably cropped.

### *Markets*

Unless profitable markets are within a radius of economic transportation, no scheme of commercial gardening is likely to prove a financial success. This factor, with those already mentioned, will largely govern the extent of the area of land to be acquired and the price which may be paid for it. Land situated on a main highway where a considerable quantity of produce might be disposed of direct to


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the consumer would warrant a higher price than a similar-sized area where little or no direct contact with such a market is possible.

The proximity of land to auction markets should also be investigated, as large quantities of produce are disposed of daily by these organisations. Where markets are near, advice concerning an advance in price for any particular line of produce can be quickly ascertained, and deliveries regulated accordingly. Further, fresh produce placed on the market will command higher values than vegetables which have been transported from a distance and which may have become stale and unattractive in appearance.

### *Transportation*

Perhaps no single factor has a greater bearing upon the success or failure of commercial gardening than transportation of produce. The carriage of vegetables by road, rail or sea—sometimes by a combination of two or all three methods. with the consequent increase in the number of times they are handled—quickly leads to deterioration and adds substantially to the cost of placing the produce on the market.

In the production of a high money-value crop the cost of transportation may not appear excessive, but, in general, all-round vegetable production transportation costs seriously imperil the success of the operator. The position regarding adequate and reasonably-priced transportation facilities should be fully investigated before finalising the location where production is to be carried on.

### *Wind-breaks*

Where not already established, wind-breaks will have to be planted as quickly as possible after the land has been acquired. When worked to a fine tilth, light soil in which seed has been sown may have the whole of the seed covering removed by wind, with the consequent exposure of the seed to the depredations of birds and other deteriorating factors. Shelter belts will prevent this disastrous form of soil erosion.

## Guarding Britain's Cornfields

WITH 12,500,000 acres under the plough this spring—3¾ millions more than in 1939—Britain's agricultural leaders are planning how to protect her corn crops from Nazi fire bombs. Last year Germany's air onslaught did not develop fully until the harvest was gathered in, but this year, combined with U-boat attacks on shipping, the menace to British food supplies is very real.

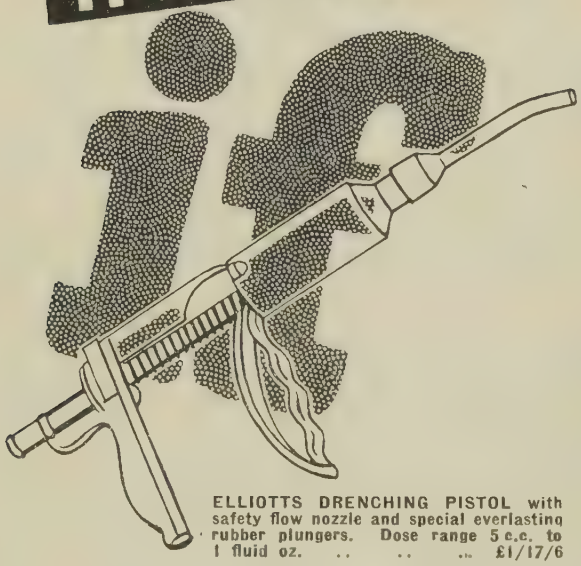
Among the safeguards which may be enforced is the cutting of fire-breaks or lanes about 30 ft. wide across the direction of the prevailing wind. The crops, cut green, would not be wasted, but made into hay or silage. Corn stooks can be protected by setting the rows as far apart as possible. Ricks would be set at least 15 yards apart, and preferably out in the field to prevent enemy landings.

For dealing with outbreaks of fire, water carts would be kept filled near the standing crops, and further reserves stored in ricks or van covers supported on stakes.

Fire-fighters will arm themselves with stirrup pumps, fruit spraying machines, liquid manure carts, wet sacks and brooms cut from timber and hedgerows. Tractors will be useful for ploughing a fire-break quickly in the path of an advancing fire, and scythes for isolating small patches.

With fire-watchers, A.R.P. wardens and Home Guards in every parish, there will be no lack of man-power to safeguard the vital harvest of 1941.

# IT MIGHT HAVE BEEN WORMS



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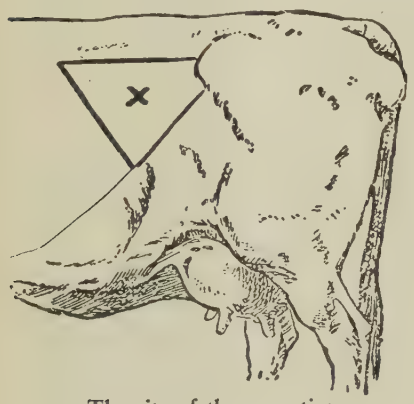
# Veterinary Notes for the Farmer

## Treatment of Bloat in Cattle

Contributed by the
LIVESTOCK DIVISION

EACH spring the problem of bloat in cattle has to be considered. In some seasons the trouble is more serious and widespread than in others. Several factors enter into the explanation. If the cows have wintered well they are not so subject to bloat, even though the spring feed may not be very different from that of other years. On the other hand, the succulent or clovery nature of the spring feed may be more conducive to bloat in some seasons. The herd management is also another factor to be considered on the




The site of the operation.

type of country where some degree of bloat is to be expected year after year.

The speedy accumulation of gas in the paunch in acute cases of bloat must be attended to without delay if the animal is to be saved. It is advisable to remove the herd from the offending pastures to prevent other animals being affected. To relieve the acutely distended paunch of an affected animal one of several measures may be taken. A gag may be placed in the animal's mouth, and, if a probang is available, this may be passed down the gullet until it enters the paunch. If gas does not escape through the probang because of the doughy nature of the contents of the paunch, it may be necessary to puncture the animal in the left flank with trocar and canula.

The site of the puncture is the centre of the triangular space formed by the last rib, the point of the haunch and the loin bones above. As this so-called triangular space is frequently non-existent in the blown animals because of its distension from the gas-filled paunch underneath, the point of puncture is taken as an equal distance from the last rib, the point of the haunch bone, and the loin bones above.

The trocar and canula are directed downwards, forwards, and inwards. The trocar is then withdrawn and the gas escapes through the canula. The canula is left in the flank as long as gas continues to escape, and may be used as a means of administering any medicinal agent direct to the paunch.

In an emergency a long, thin-bladed knife may be used to make the puncture. This is not so satisfactory, as the escape of gas is not free, and in any case some of the solid contents of the paunch may escape with the gas. Abscess formation frequently results in the flank wall.

In less acute cases a large dose of ordinary baking soda may be given in water as a drench. From ½lb. to ¾ lb. may be given in a quart of cold water. Another drench frequently given is prepared by mixing two fluid ounces of oil of turpentine in a pint of raw linseed oil.

Occasionally, massage of the flank and exercising the affected animal is all that is necessary. The escape of gas through the usual channel, that is, through the gullet, may be facilitated by the insertion of a gag in the mouth. The salivation thus caused brings about attempts at swallowing, when the gas may be regurgitated.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•

*As supplied to the Royal Veterinary College, London.*

•

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A calf which had been dead for four days was removed from a cow. The removal was successful, but the smell was very offensive. He used undiluted Dettol on his instruments, and also syringed the cow with undiluted Dettol. The result was excellent, which was far more than expected, and the cow was able to walk a little distance next day, and soon got perfectly well.

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2

# Actinobacillosis in a Bull

ALTHOUGH actinomycosis and actinobacillosis are frequently seen in New Zealand as lumpy jaw and wooden tongue, the case to be described is of interest because of its unusual size and location.

The subject was a five-year-old Hereford bull. The owner first noticed a swelling in the throat in October, 1940. This became progressively larger, and spread down the neck to the brisket. When I inspected the animal in March, 1941, there was a large, firm swelling reaching from the angle of the jaws to the front of the brisket. The animal had fallen away considerably in condition, and it was decided to destroy it.

Post-mortem examination revealed a large, roughly cylindrical growth some 2 ft. long, and ranging in diameter from 6 to 9 inches, and in the opinion of the writer would weigh about half a hundredweight.

Examination of the growth showed is to be a case of actinobacillosis.

*—R. P. GILDER, Veterinarian, Palmerston North.*


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# Plant Suspected as Poisonous to Stock

A PLANT suspected of being poisonous to stock, caper spurge (*Euphorbia lathyris*), was seen growing on a property in the Manawatu district, and the owner mentioned that a pet lamb had eaten some of the plant and died the following day.

The plant contains an acrid juice, and the seeds yield a purgative oil. Euphorbia is distinguished by its irritant action, and it may cause an inflamed mouth and stomach with intense diarrhoea and vomiting. If sufficient dose is taken it causes nerve disorder, delirium, unconsciousness, general collapse, and death. The post-mortem appearances are those of acute gastro-enteritis.

The accompanying illustrations show the plant in two stages:—(1) A young plant and one fully grown; (2) showing both types of leaves; and (3) a young plant and the top of a matured plant. Seed pods can be seen along the stems.

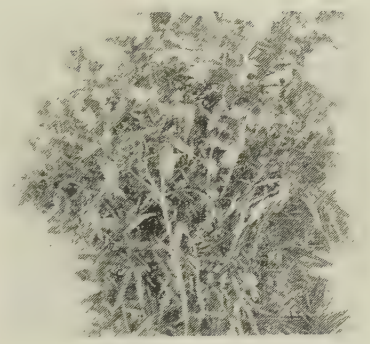


*Fig. 2.*—Showing both types of leaves.

When ripe, the pods are of a blackish-brown colour. The pods fall to the ground and open, releasing the seeds. When the young seedlings first come through the ground they have the husk of the seed over them. Apparently, the seeds which fall do not germinate until the following year, but growth is fairly rapid, and the plant soon spreads. The height of a full-grown plant is about 2 ft. 6 in.

Having a short tap root, the plant is easily pulled and the spread may be prevented if it is not allowed to seed. The first or lower leaves are dark, green, long and tapered. When approaching the mature stage the plant grows a light green leaf of triangular shape, which appears to be a peculiar characteristic of this plant. The plant apparently likes good soil, and does not appear to suffer if growing in the shade.

—*H. A. BAYLEY, Inspector of Stock, Palmerston North.*

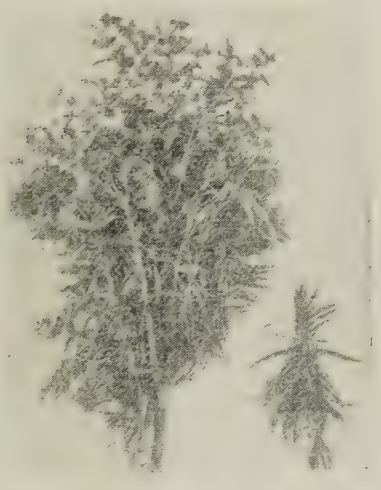
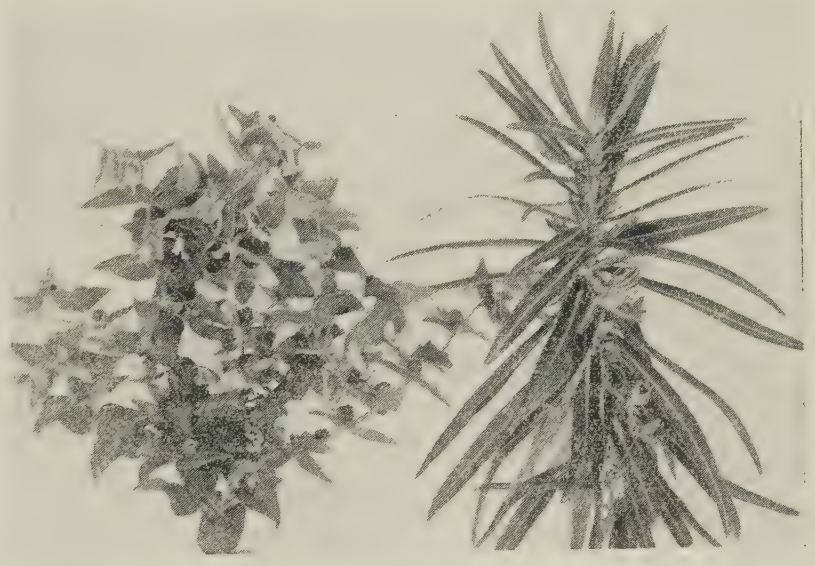


*Fig. 1.*—A young plant and one fully grown.



A young plant and the top of a matured plant. [*H. Drake, photos:*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## Scabs on Sheep's Mouths.

"SHEEP" (MID-CANTERBURY):—

I would like your opinion on a scab with which some of the sheep are affected.

The scab is chiefly around the mouth, lips, and nostrils, with a little sometimes up the centre of the face. They are about as big as a sixpenny piece and dry and hard, except in the worst cases, where they seem to crack and run. In the worst cases the animal's lips are so swollen and cracked that it is hard for them to eat.

There seems to be about 10 per cent. of the two-tooths affected, with a very rare case in the rest of the flock. They were all wintered together on soft turnips, with a good ration of oat-sheaf chaff, and since then they have been running on green oats.

LIVESTOCK DIVISION:—

The condition affecting your sheep is known as contagious ecthyma, a virus disease affecting the mouth, lips, and nostrils, resulting in scab formation in these parts. The disease is seen from time to time in lambs and younger sheep, but more rarely in older sheep because of the possibility of the latter having acquired an immunity to the disease.

Outbreaks are seen quite frequently in sheep on coarse feed or when the sheep are on turnips, especially during frosts. Although you are probably more interested in the treatment of your affected sheep, it is necessary to advise that this disease may be successfully prevented by vaccination of the susceptible flock. Therefore, on any property where the disease appears year after year it is advisable to vaccinate the lambs and young sheep. The virus may remain active in the scabs on the ground and carry on the infection in subsequent years.

The technique of vaccination is analogous to that of smallpox vaccination in the human subject. It is comparatively simple, and can be carried out on lambs at marking time. The vaccine is prepared at the Animal Research Station, Wallaceville.

A small area of skin inside the flank is cleaned and the skin stretched with the fingers and thumb of one hand; then several superficial scratches about one-quarter of an inch long are made with a scarifying instrument. One drop of vaccine is thoroughly rubbed into the scarified area with a small stiff-bristled brush. It is necessary to emphasise that the skin should be lightly scarified, only the superficial layer being broken through; it is neither necessary nor desirable to draw blood. The areas scarified must not be large, and the amount of vaccine limited to one drop or so, otherwise the resultant "takes" will be unnecessarily severe.

Medicinal treatment for this disease is not particularly satisfactory, but some benefit may be derived by cleaning the areas involved in badly-affected animals, and applying a preparation made by a mixture of one part of tincture of iodine to two parts of glycerine. Honey and boracic acid makes a suitable ointment. Repeated applications of the selected treatment are indicated.

A change on to soft feed such as the green oats you are now using will assist in bringing about recovery.

**You Can't Reasonably Continue Using the Knife to Your Disadvantage!**

Striking results are quoted in the Scottish Journal of Agriculture of an experiment with the two methods of castrating lambs—the knife and the bloodless castrator.

Ten pairs of twin half-bred male lambs were taken from a flock of Cheviot ewes. One twin was castrated with the castrator, the other with the knife. The live weight gain between castration and weaning was recorded for each lamb, and the gain made by one lamb castrated with the castrator compared with that of its brother castrated with the knife.

IN EVERY CASE, THE BLOODLESSLY CASTRATED LAMB MADE MORE RAPID GAINS, THE AVERAGE INCREASE BEING 59 lb., AS AGAINST AN AVERAGE OF 53 lb. FOR THOSE CUT WITH THE KNIFE, AN ADVANTAGE OF 6 lb. PER HEAD.

Seven single lambs castrated with the castrator averaged 64 lb. increase between castration and weaning, compared with an average of 58 lb. for seven cut with the knife, again an advantage of 6lb. per head. In addition to yielding a heavier lamb, the bloodless castrator gave a bigger lamb with bolder head and stronger bone, and in better condition.


## Scours in Calves

"MACK" (TE PUKE):—

Would you please give me some advice about scours in calves?

Every year I have trouble with my calves. They do all right till about three or four weeks old, when they scour, at first foul-smelling liquid, usually blackish in colour, but not always. They go very thin and sunken in the eyes in 24 to 48 hours, and the scouring usually turns to blood in from one to three days.

Some of them die, though most of them get better eventually, but it puts them back very badly. They are often not much more than skin and bone in a week's time. I have tried many cures, but none are much good. At present I give a dose of castor oil at the first symptoms, and follow with a mixture made up by the local chemist.

What is the cause? It is definitely not dirty feeding tins nor cold milk; they usually take bad before I start them on skim milk, so this has nothing to do with it.

Is it likely to be a germ in my calf paddock? I have been rearing calves in the same paddock for many years. It is really the only suitable place to keep them.

LIVESTOCK DIVISION:—

According to the history of your losses it would appear as if your young calves become infected with a microscopic parasite known as a coccidium, the disease being known as coccidiosis.

At the age of three or four weeks the calves are eating some grass or probably drinking from contaminated surface pools in the calf paddocks, and in this way pick up the coccidia from the calf paddock. It is essential that you discontinue the use of the present calf paddock, which appears to be "calf-sick" and probably teeming with parasitic forms of various kinds. The calf paddock should be ploughed up, drained if necessary, and heavily limed and cropped. It may then be sown down in grass again and used for a number of years as it is so suitable for the rearing of calves.

It is difficult to suggest how the disease may be prevented if you continue to use the same paddock again this year. Is it possible to keep the calves off the paddock and to feed them on hay until they become older, as the disease is more serious in the case of very young animals? It will pay to use another paddock for the calves, even though there is an increased labour in feeding them.

The disease is serious for young calves in that once the diarrhoea turns to dysentery the loss of blood is so serious that the young animals are rapidly reduced to skin and bone. The serious setback, even though they recover, materially affects the normal growth and development of the calves and interferes with the digestion and absorption of food. Such a setback renders the calves more susceptible to both stomach and lung worms at a later age.

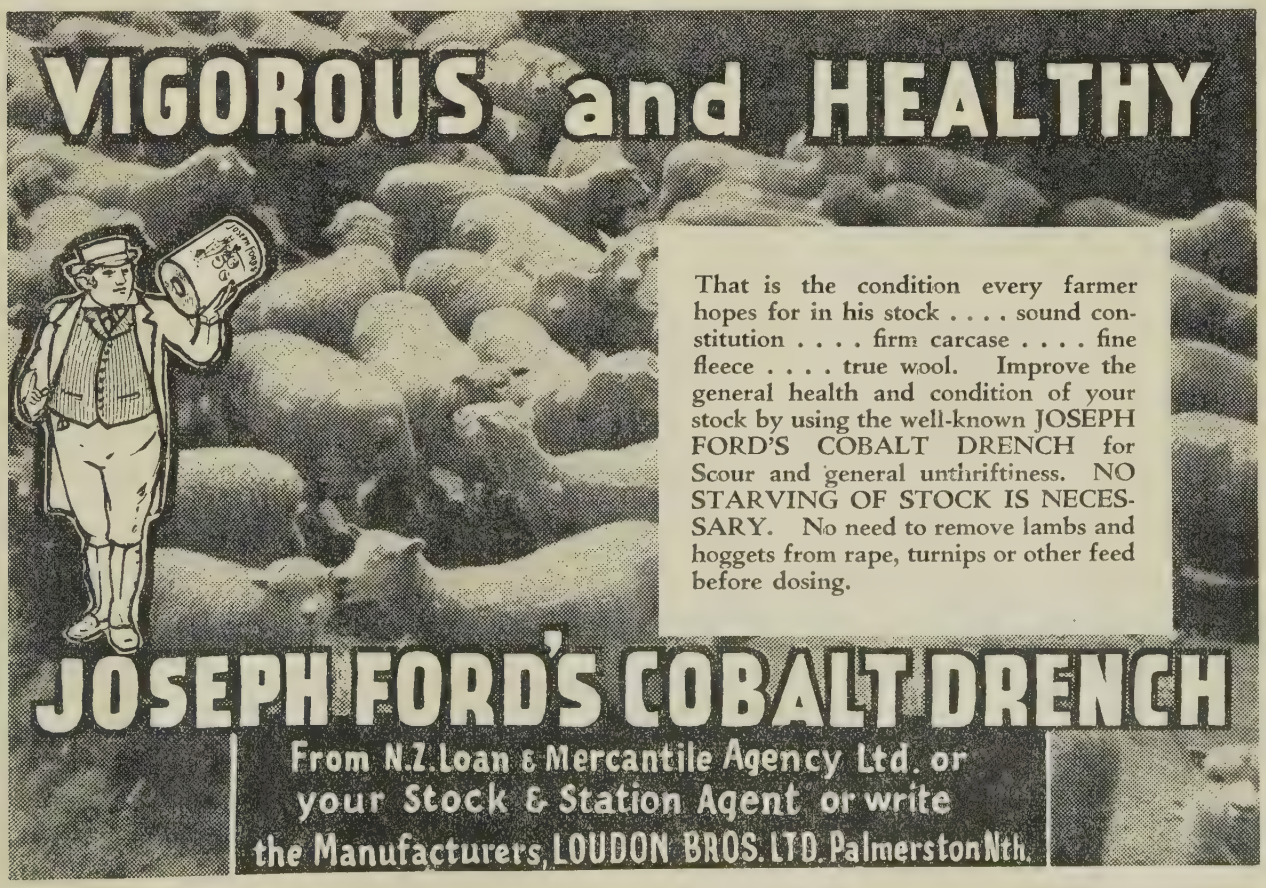
The worm position is also another very strong argument in favour of ploughing up the paddock and using another paddock for calves for a season or two.

The treatment of affected animals consists of removing them from the paddock, giving a laxative dose of medicine (such as castor oil), and then following up with some medicine containing an iron preparation to counteract the loss of blood. Good nursing, nourishing, food in small quantities, keeping the calves dry and warm, and limiting the drinking of water, which should always be pure, are all essential features of successful treatment.

Drinking surface water or contaminated water in the calf paddock should be absolutely prohibited.

## Advisory Service on Veterinary Matters.

**Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.**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## Bearing Trouble.

W.A.O. (GISBORNE):—

In bearing trouble, is not the protrusion actually part of a distended and swollen bladder enveloped in a sac of the lining of the vaginal passage, and could it not be dealt with by first emptying the bladder by means of a rubber catheter?

LIVESTOCK DIVISION:—

In a certain number of cases of bearing trouble the bladder may, as you suggest, be displaced and form part of the prolapse, enclosed within the lining of the vagina. Passing of a catheter, however, would probably be difficult, if not impossible, both because of the displacement of the opening of the urethra and the sharply-bent state of the bladder neck. Gentle pressure on the prolapsed portion usually restores the bladder to its normal position, when urine can be expelled naturally.

In an extreme case it might be necessary to tap the bladder through the wall of the vagina with a hollow needle, such as a large hypodermic needle.

This displacement of the bladder is not always present.

## Pig Feeds Compared.

"ENTHUSIASTIC SUBSCRIBER" (OHURA):—

Will you please print any facts you have on hand comparing barley, maize and copra as pig feed along with molasses for wintering store pigs?

SUPERINTENDENT OF THE PIG INDUSTRY:—

The feeding value of barley is 72 lb. feed per 100 of barley, of maize 80 per 100, of copra 126 per 100, of molasses 58 per 100 lb., and of meat-meal 80 to 100 lb. per 100. These should be the relative prices paid for them. Barley and maize can be the only and complete diet of the pig, but copra, because of its high oil content, should never be fed at the rate of more than 2 lb. per day per head to pigs of over 100 lb. and 1 lb. per day to lighter pigs. It is more satisfactory if fed at half of these rates. Similarly, molasses should never exceed about one-sixth of the pigs' daily feed supply.

All these feeds used for wintering pigs can be profitably used at the rate of not more than 2 lb. per head daily for wintering pigs on grass and at 1 lb. per head daily for pigs on roots. The feeds are too dear to use in amounts greater than this. They are merely foundation feeds, given in the absence of milk to enable pigs to make full use of their main food supply, grass, or roots or other cheap home-grown feeds. Half a pound of meat-meal per head daily is essential in the absence of milk.

Meat-meal is the cheapest meal for wintering pigs, and should be used at the rate of ½ lb. daily whatever other grain meal is used. When meat-meal is used, other grain such as maize, barley, copra, etc., may be used in addition at rates varying from nothing up to 1½lb. daily, depending on the size of the pig, the amount and kind of bulk available, and the rate at which it is desirable to grow the pig. In general it does not pay to feed so as to fatten pigs in cold weather. It does pay to keep them in good thriving condition.

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# Farm Practice and Management

## Bumper Crop from New Zealand-grown Rape Seed

IN view of the article in the April issue of the "Journal" by J. H. Claridge and J. O. Wallace on the growing of turnip and swede seed in New Zealand, the results achieved by Messrs. Mirfin Bros., of Ikamatua, with their first trial of New Zealand rape seed are of some interest.

Fifteen acres of Broad-leaf Essex were sown together with grass seed following a crop of oats, and the rate of seeding (2½ lb. per acre) was heavier than is usually sown with grass because of a doubt whether the seed would prove equal to the imported lines customarily sown.

The result exceeded all expectations. An excellent strike followed, and the crop was the heaviest ever experienced on the property. The illustration shows the last break just before feeding off, and at that time the first break had made a strong and rapid recovery from grazing.

The crop was actually thicker and heavier than was desirable, as the grass and clover growth was smothered, and the resulting pasture is poor and open. A seeding of 1½ lb. of rape per acre should prove ample when sown with grass.

The crop from a sowing of certified New Zealand-grown rape seed.

The 15 acres carried 420 lambs for eight weeks, after which 150 ewes and 80 calves were maintained for a month on the second growth.

*—A. D. MERCER, Fields Instructor, Greymouth.*

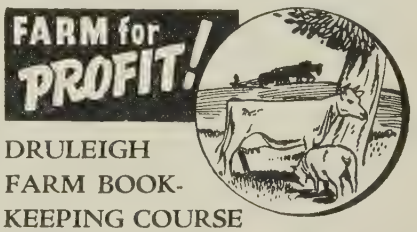
## An Aid to Better Ensilage

IN some districts many stacks of fair silage are saved without weighting the top, but it is generally recognised that covering with earth gives a better product. Difficulty is often experienced, however, in providing a suitable retaining medium for the earth on the edge of the stack. On the farm of Mr. J. Shepherd, Tariki, rushes dug from an adjoining swamp have effectively solved the difficulty.

The rush plants are placed in position with the roots on the edge of the stack, and are held there by a layer of earth on their tops. The second row of rushes is then added, and the process repeated until a sufficient weight is obtained.

The illustrations show the efficacy of the rushes and the method of using them.

*—G. A. BLAKE, Instructor in Agriculture, Stratford.*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# Automatic Device to Ensure Permanently Open Mole Drain Outlets

A MOST ingenious but simple device to ensure permanently open outfalls in mole drain outlets has been invented by Mr. O. L. Sykes, of Westmere, and Mr. H. A. Harcombe, of Masterton, which promises to find wide favour among mole drainers.

Briefly, it consists of a device attached to the end of an ordinary mole plug, whereby a field tile may be drawn into the end of the mole drain. When the tile is pulled in to its full depth a simple automatic release permits the mole plough to continue up the paddock while the tile remains firmly fixed in the outlet.

There is no need to emphasise to experienced mole drainers the vital importance of maintaining a clear and open outlet for each mole drain. Indeed, other things being equal, the life of a mole drain depends on the care which is devoted to the regular clearing of unprotected outlets. In fact, most will agree that it is practically essential to insert a tile in the end of a mole in order to ensure the free escape of water, and while the usual practice of digging back along the length of the mole and setting in a tile is fairly satisfactory, it cannot be compared with the device invented by Messrs. Sykes and Harcombe. Not only is this simple to handle—it takes only a few seconds to attach—but it eliminates the time and labour of digging and provides an absolutely solid job, leaving no possibility of the tile being displaced by seepage of water, as may result where the soil is disturbed by digging.

The potentialities of this device will be readily appreciated by exponents

*Fig. 1.*—The device attached to a mole plug, without a pipe in position.

*Fig. 2.*—The pipe is firmly held in position preparatory to entering the bank. This pipe is slightly pointed, but this is not strictly necessary.

*Fig. 3.*—Although this bank was rather dry, a 2½ in. pipe (outside about 4 in.) is pulled in quite readily behind a 3 in. plug.

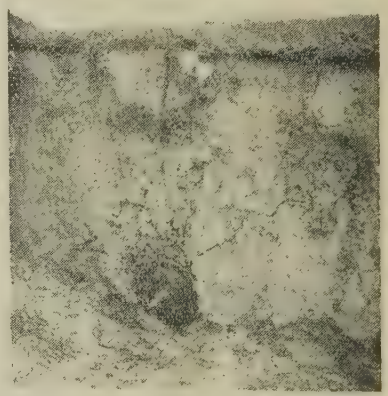

*Fig. 4.*—When the back plate strikes the bank the pipe is automatically released from the mole plug.

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of the McLeod system of mole drainage. On many types of country the collection of a number of "major" or gathering moles to one tiled outlet could be eliminated and the "major" outfalls simply dropped over a bank and protected by pulling a tile into the mole end, with consequent saving of time, labour and tiles. On the other hand, the possibility has also been explored of using this device to protect further the junctions of "major" moles with the main tiled outlet, where this procedure is preferred, by pulling tiles into the ends of the majors along the side of the main outlet trench. This would, of course, necessitate opening up a fairly wide outlet drain, and it remains to be seen from further experience whether the benefit gained would justify this, or whether it might be more satisfactory to simply eliminate the main tiled outlet as suggested above.

The use of the attachment is illustrated in the accompanying series of photographs.

—*N. LAMONT, Instructor in Agriculture, Masterton.*

*Fig 5.*—A section of the bank cut out to illustrate the actual position immediately after the release has operated.

*Fig. 6.*—Another view of (5). The tractor would normally have continued up the paddock. Note the absence of any attachment to the plug that might interfere with the smooth moulding of the drain.

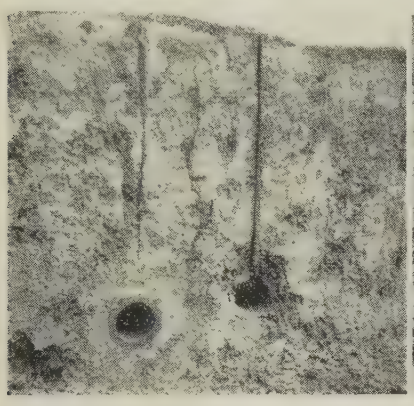


*Fig. 7.*—The new and the old—a thoroughly firm and solid outlet with an indefinite life ahead of it, and an unprotected outlet subject to weathering and blockage.

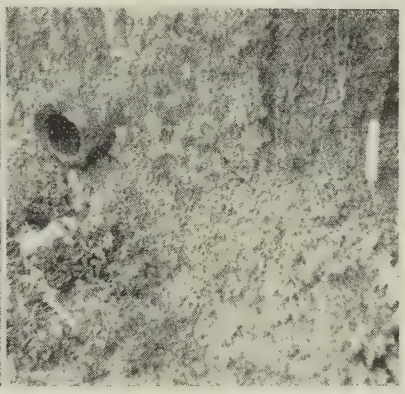
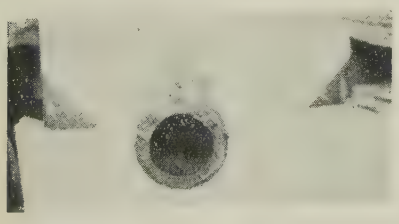


*Fig. 8.*—Twelve months old—weathering has almost completely blocked the unprotected channel (near pocket-knife), while the firmly embedded tile continues to function.

[*N. Lamont, photos.*

# An Old Style of Tile Drain Pipe

ABOUT 1850, when farming in England was in a progressive state due to the attention it received from the nobility and the low cost of agricultural labour, great pride was taken in every class of work performed on the larger estates. In underground drainage, for instance, the tiles used were in two parts—a flat piece which was placed in the bottom of the drain, and a curved or rounded piece which was placed over the flat one, thus completing the drainage channel.



Tiles were later manufactured which combined these two features, that is, a round tile with a flat surface to pre-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vent rolling or moving when the earth was replaced.

Pioneers who came to New Zealand about this time found this type of tile unprocurable, but in 1870 the late Colonel Trimble, of Inglewood, had tiles to these specifications made at the Smart Road, New Plymouth, brick and tile works. They were used to drain a garden site, and on being lifted recently, were found to be in perfect order.

It is possible that this flat-sided tile may have been manufactured in other parts of New Zealand, but today they are so rare that their type is worthy of mention. Their use was discontinued with the advent of a draining spade that left a rounded bottom into which the present-day circular tile fits to prevent movement.

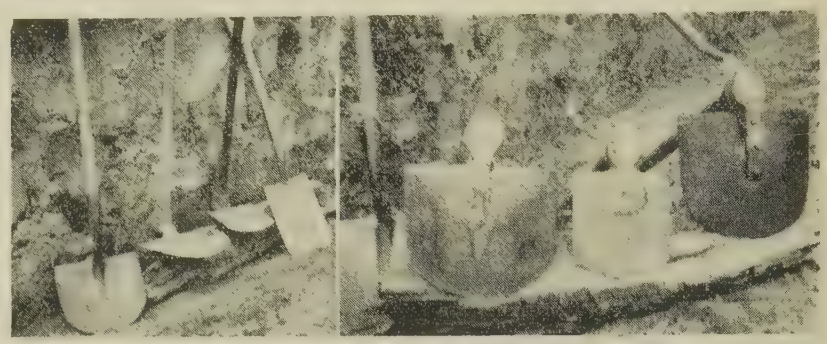
The accompanying illustration shows one of these flat-sided tiles, made in 1870 at New Plymouth.

*—G. A. BLAKE, Instructor in Agriculture, Stratford.*

# New Tools for Old

IN the old story of Aladdin's lamp there is the well-known cry of "New lamps for old," and I am sure present-day farmers will appreciaate the value of these new and useful implements made out of old shovel and spade blades fitted to old pick or adze heads.

These implements can be made by any farmer who has a small forge and is handy with tools. The implements are made by either welding or rivetting a worn-out pick or adze head to the blade of an old shovel or spade, and the composite head fitted to a pick handle. When the implement is completed it may be necessary to adjust the set of the blade, but this can easily be done by heating the head and bending the prong of the pick to the required angle



*Left.*—Two converted shovel heads compared with a shovel and a spade. *Right.*—How the old pick heads can be either welded or rivetted to the blades.

This implement will be found useful for a variety of purposes. For instance, these implements are most suitable for cutting through benches when fencing in hilly country and for cutting down and levelling steep benches where a hillside plough has been unable to work.

*—W. T. BROWN, Fields Instructor, Taumarunui.*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# Liming Pays in the Hutt and Makara Counties

OUTSTANDING responses to liming have been obtained in both the Hutt and Makara Counties. The clay hill country of such localities as the Ohariu Valley, Haywards, Tawa Flat, and around Porirua, as well as the lower foothills of the ranges from Otaki north, have long been known to give a good response to basic slag, but besides being unprocurable for some time, basic slag is difficult to handle and to sow on hill country.

In order to find an alternative to basic slag a number of observational trials were established some three years ago by the Instructor in these two counties. Without exception, these trials have clearly shown that adequate liming is essential to good results from phosphate manuring, and that provided the lime shortage is put right, very good results can be obtained by the use of superphosphate.

Liming alone is not advocated, because the phosphate is still required to give really good results. The trials referred to are on the farms of Messrs. Gordon Bros., Ohariu Valley, W. S. Kells, Haywards, C. G. Steel, Takapu North, Tawa Flat, W. Mexted, Porirua, and C. C. Holmes, Otaki.

On Messrs. Gordon Bros.' farm the limed area is outstanding, and is visible from the hills more than two miles away, but on each of the other areas very good results from the addition of lime have been obtained. It takes about one year for the lime to show up well, but when it does there can be no mistake about its value or the fact that liming pays on this type of country.

Farmers topdressing any of the clay hill and rolling country of the Hutt and Makara Counties can definitely use lime freely to assist in getting returns during the present shortage of phosphate manures.

*—G. S. ROBINSON, Instructor in Agriculture, Levin.*

## Jam From Powder

NEW storage processes for fruit have been devised by chemists at Bristol University Research Station. The work was originally designed to meet the problem of Britain's own surplus fruit, but, with the cessation of imports, the results are now available for Empire producers.

Surplus apples are economically stored, with great saving in space, in the form of apple juice and apple treacle. Natural sugar makes this product extremely sweet, and it is a valuable substitute for sugar in all forms of household cooking.

Soft fruit, plums and apples are reduced to a dry fine powder, useful for food processing. Plum powder can be made into jam at any time of the year.

In their work on blackcurrant syrups, the experts have found that, after a long period of storage, there was present, in some cases, double the amount of Vitamin C (a preventative against scurvy) as in fresh citrus juices. The shortage of Vitamin A has also drawn attention to the need for using all surplus carrots, and a powder is now being extracted commercially in plant normally used for the spray drying of milk.


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## Orchard Notes

# Spraying of Apples and Stone Fruits

THE principal pests and diseases to be watched for during the month will be black-spot, codling moth, powdery mildew, leaf hopper, red mite, and bronze beetle, and the spraying schedule as recommended in last month's "Journal" will be found suitable for control. Complete coverage, adequate equipment, proper materials, and correct times of application are essentials to success.

As the blossoming periods finish, spraying operations take on a different aspect. Up to the present only single sprays have been necessary either to combat insect pests or prevent fungus diseases. Future sprays will mainly consist of several different materials in combination for the control of both insect pests and fungus diseases, and care must be taken in the selection and strength of such materials in order that no damage may be caused to either fruit or foliage.

At this period fruit is very susceptible to injury, and russeting is liable to occur should wrong materials or strengths be applied. Trees which may be in a weakened condition through overcropping or lack of attention are more easily damaged by spray mixtures, and precautions should therefore be taken.

With most varieties of apples a combination of lime sulphur at a strength of 1:150 and colloidal sulphur at a strength of 2:100 will be found effective for the control of fungus diseases. This spray also has the advantage of assisting in keeping red mite in check by destroying many of the newly-hatched insects and thus keeping the trees fairly free from this pest until it is necessary to apply summer oil. Lime sulphur is more effective as a fungicide when used in combination with colloidal sulphur than when used alone. The use of colloidal sulphur alone on varieties known to be susceptible to spray injury and russet is recommended from the blossoming period onwards.

### *Codling Moth*

Spraying for the control of codling moth is recommended from the petal stage onwards. An earlier spray than usually applied is advisable. The addition of 3 lb of hydrated lime to every 1½ lb of lead arsenate per 100 gallons of water is recommended as a safeguard against foliage injury, especially in cases where the water used is inclined to be hard. If the lead arsenate and Bordeaux mixture combination is used it will not be necessary to add the extra hydrated lime, as there will be sufficient lime present in the Bordeaux mixture if prepared as recommended. Lime sulphur 1:150, plus colloidal sulphur 2:100, plus lead arsenate 1½:100, plus hydrated lime 3:100, if applied thoroughly, will materially help in the control of fungus diseases as well as reduce risks of codling moth infection. Another application, using the same formula, should be applied from ten to twelve days later.

### *Bronze Beetle*

This pest causes considerable damage to fruit in the young stage by chewing the surface of the apple, and often makes it unsaleable. Clean cultivation, especially around the trees, is one of the best means of control, and spraying with lead arsenate will also be effective in resisting attacks. Applications must be thorough.

### *Apple Leaf Hopper*

Apple leaf hopper causes considerable damage to the foliage of apple trees, especially during dry seasons, and if nothing is done for its control the fruit will be considerably disfigured by the excreta of the insects. Hoppers usually appear soon after the trees come into foliage, and the addition of nicotine sulphate at a strength of 1:800 at this period while the insects are in the nymph stage is recommended. If they are left until the winged stage is reached, control will be increasingly difficult. Should nicotine sulphate be used alone, better results will be obtained by the use of an activator.

### *Spraying for Pears*

The use of Bordeaux mixture is not recommended on tender-skinned varieties of pears, such as Winter Cole and Josephine, after the blossoming period because of the possibility of russet and skin injury, which detracts from the general appearance of the fruit. For such varieties the sprays recommended for apples can be applied with safety. Climatic conditions in some districts may make it necessary to use Bordeaux mixture for the prevention of black-spot on other varieties, especially where control has not been obtained from the base sprays. Bordeaux mixture at strength 1½:3:100 will be found quite as effective as a stronger solution, with less chance of russeting, and the addition of lead arsenate at strength 1½:100 will keep a good check on codling moth infection. Pear trees are usually larger than apple trees, and every effort should be made for a complete coverage.

### *Spraying of Stone Fruits*

Control of brown rot under certain climatic conditions is difficult, especially where there has been a severe attack the previous season or where blossoming infection has not been controlled. Sulphur sprays are the only sprays recommended from this period onwards for the control of brown rot, and it may be necessary to repeat the application at three-weekly intervals up to the time of harvesting. For peaches, nectarines, and plums, lime sulphur at a strength of 1:180, with the addition of colloidal sulphur at a strength of 2:100, is recommended as a control. The same spray will also help in the prevention of leaf rust and in other fungus diseases affecting stone fruit-trees.

Both black and green aphis may appear at any time as the season advances, and spraying for control should be attended to as soon as they are seen; otherwise, the foliage will be so deformed that it will not be possible for the spray to penetrate into the colonies of aphis. Summer oil at a strength of 1:100 or nicotine sulphate at a strength of 1:800 will cope with these pests very effectively, provided all the colonies of aphis are thoroughly sprayed. It will be advisable to repeat this spray within ten or twelve days to effect complete eradication.

### *Cultivation*

The production of a good tilth by the breaking down of the soil should be the aim during the present month. This will conserve the moisture so necessary for the healthy maintenance of the trees during the hottest periods of the year. Response to good cultivation is reflected in the robust condition

of the fruit trees, and the chances of fruit russet are reduced considerably. Weather conditions during the spring will determine to a large extent the frequency of cultivation, but advantage should be taken of every opportunity to prevent the formation of a hard crust on the surface by use of harrows or cultivators. Pests and disease will be considerably reduced by clean cultivation right up to the trunks of the trees.

*—G. STRATFORD, District Supervisor, Dunedin.*

## *Citrus Notes*

# Navel and Island Oranges

THE principal characteristics of the Spanish, Mediterranean, and blood oranges were mentioned in last month's notes, and there remain for description the navel and Island orange varieties.

The navel oranges probably comprise the largest group of oranges planted in New Zealand. Varieties include Washington Navel, Thompson's Improved, Golden Nugget, Groverley, Navelencia, Bahia, and Carter's Navel. As trees, the navel orange varieties are rather dwarf, with rounded tops and glossy green foliage. The fruit is characterised by a navel marking of greater or less extent.

### Reminders for the Month.

**Continue systematic pruning, giving particular attention to trees affected by frost or citrus brown-rot.**

**Remove dead wood from citrus trees. This is the natural breeding ground of the citrus-borer.**

**Check the citrus trees for bark-blotch. Early detection and treatment is essential.**

**Apply a 3-4-50 Bordeaux mixture spray during October. This is of the greatest importance to young lemon fruits.**

**Harvest your citrus fruits with care.**

**Washington Navel** is the best-known variety. Under equal conditions it is generally a smaller tree than most orange varieties. It is thornless, except for the young shoots, and has a marked inclination to "sport." Leaves are alternate, dark green and larger than with most other varieties, the margin of the leaf being entirely or slightly wavy. The fruit ripens in September. It is large—2½ to 3½ inches in diameter—and globose in shape. Colour is deep orange at maturity. The flesh is rather coarse or "meaty," but the pulp is melting and juicy. There is generally a small distinct navel and no seeds.

**Thompson's Improved** is not really an improvement on Washington except for its fine shiny rind. Internally, it is similar to Washington, but externally it can be distinguished by the smoother rind, a higher orange colour, sometimes a little elongated in shape, and generally smaller under equal conditions. The fruit of this variety must be picked early, as it is inclined to be lacking in juice.

**Golden Nugget** arose as a Washington Navel sport. The tree has a pendulous habit, and is a dwarf grower. The fruit has deep furrows on the half of the rind next the stalk. This is more pronounced than with any other navel. Also, the fruit is large with pale yellow smooth rind and internally free from rag.

**Groverley** is a weaker tree than Washington, and the fruit is not as symmetrical. Like Golden Nugget, the fruit of this variety has furrows on the half of the rind next the stalk. It is large, yellow, and flattish, but not quite seedless.

**Navelencia** is another Washington sport, and is generally of inferior quality on sweet orange and rough lemon rootstocks. The fruit is medium to large, smooth and thin skinned.

**Bahia** is the old variety from which Washington originated. It is a vigorous variety, but somewhat a shy bearer and fruit a little coarser than Washington.

**Carter's** is a recently introduced strain of Washington.

### *Island Oranges*

The Island oranges are of the type grown throughout Polynesia. The trees are generally thorny, vigorous growers, but take a longer period in which to commence bearing. Local varieties are Best's, Wright's and Dacre's oranges.

*Cool Storage Notes*
*On page 347*

**Best's** is a local seedling formerly known as Best's Seedless, but it is probably better to discard the latter part of the name, as it is not entirely seedless. The fruit generally bears a distinct navel, but the growth of the tree excludes it from the navel group of oranges. The fruits are irregular in shape, but are generally flatter than navel oranges. The flavour is good, and the pulp exceptionally melting, and there are about 12 irregular sections.

**Wright's** is a sport from Best's, raised by Mr. H. R. Wright, of Avondale, Auckland. The tree is quite thornless. The fruit is regularly flat and uniform in shape. It has a ribbed appearance on the half of the rind next the stalk, as is noted with Golden Nugget and Groverley. The fruit is smoother in the rind than Best's, but the same high quality is retained.

**A 15-year-old tree of Best's sweet orange on *Poncirus trifoliate* rootstock at nursery of H. R. Wright, Avondale, Auckland.**

**Dacre's** is another seedling, derived from Island oranges. The tree is a strong grower, and the fruit is roundish in shape and of average size and good flavour.

In next month's notes reference will be made to Mandarin varieties and Mandarin hybrids.

*—A. M. W. GREIG, Citriculturist, Auckland.*

# Citrus Bud Selection and Variety Tests In New Zealand

*Do you know that New Zealand imports more than 500,000 cases of citrus fruits annually? Is this necessary? We have some good quality local grapefruit and lemons, and are searching for a variety of local sweet orange and mandarin which does well in the Dominion. Do you realise that every sweet orange growing country had to evolve its own particular varieties suitable for local conditions, and that the industry became successfully established only when such variety was discovered? Are you going to assist this work of finding the most suitable variety and improving our lemons, oranges and New Zealand grapefruit by careful bud selection?*

IN the past the propagation of citrus trees has been done by seed, cuttings, layering, budding and grafting. To-day the standard method is by budding, a system of vegetative reproduction whereby the young citrus tree retains the characteristics of the tree from which the original bud was taken. The selected bud is inserted into one of the standard root-stocks for citrus trees, namely the sweet orange (*Citrus sinensis*), the Rough Lemon or Citronelle (*Citrus limonia*), the trifoliate orange, (*Poncirus trifoliata*).

Although rootstock and general environmental factors have a considerable influence on the development of the young citrus tree, trees planted out on the same rootstock and within the same environment differ widely. In every commercial citrus orchard to-day, there are many qualities of trees both in vigour of growth and in the quality and quantity of fruit produced per tree. This difference is largely due to the variation in the original buds from which trees were propagated.

The citrus grower in the past has paid too little attention to the selection of his original trees, and when, by experience, he learns of his mistakes he may have spent many years of hard conscientious work on inferior trees. Not only should rootstock seedlings be severely culled, retaining only the strongest, but also the best available citrus buds should be budded on to those rootstocks.

The work of finding the best buds available is known as bud-selection. This requires the observation and whole-hearted co-operation of every citrus grower as well as that of every citrus nurseryman. Generally, citrus trees have been propagated from the best available material known to the propagator, but the individual person who was propagating the trees has been limited in his choice by limited knowledge of trees available. Formerly buds were selected from one variety and at a later period selection was mainly confined to the strain within the variety, whereas to-day buds are, in the main, or should be, selected from the best trees or best portions of trees of a superior strain of a variety.

Citrus bud-selection work has been carried out in other parts of the world, and the work of A. D. Shamel and his co-workers in the United States is well known. Similar work has been undertaken in New South Wales, and the necessity for such bud selection has been recognised in New Zealand for some years. In order to put citrus bud-selection on a sound basis and to co-ordinate past work, it is suggested that each individual grower become an observer and report to the Orchard Instructor and Citrus Growers' Committee for the locality trees of outstanding merit for quality and quantity of crop in the orchard.

Having selected the outstanding trees, it is proposed that fruits be assembled and exhibited locally from these trees and then forwarded to the Central Bud-Selection Committee for its selection and comments. All selected trees would be marked and cropping record for the next three years obtained. At the end of this period there should be some reliable data in each district. It is recommended that no buds should be cut before the end of the three-year trial period.

When definite proved trees have been secured after the trial period it is proposed to arrange for the securing of the buds and the supplying of nurserymen with them on conditions to be later agreed upon, and also to plant out bud-selected trees and encourage intending planters to inquire for trees, using such tested and selected buds.

# Using Bordeaux Mixture

FUNGOUS diseases of crops cause serious annual losses. Once the crop is seriously affected, control of disease is not easy. The plants may be coated with a protective film which, if complete, prevents the entry of disease organisms into the plants. For this purpose Bordeaux mixture applied as a spray and allowed to dry on the plants is satisfactory with many plants, but every portion of the plant above the ground must be coated, and the covering must be renewed as the plant grows and as the Bordeaux loses in effectiveness.

It may be necessary to spray at from 10- to 20-day intervals, or more frequently when warm humid conditions occur. Under the latter conditions the plant grows rapidly, the film of spray deteriorates readily, and infection by fungi is likely to be more serious. The spray should be applied when the plants are dry, and early in the day so that it dries. A dull but fine day without wind should be selected for spraying.

Bordeaux mixture is prepared from copper sulphate (bluestone) and hydrated lime (slaked lime). Both ingredients may be obtained from good hardware stores and seed merchants. The copper sulphate (crystals or powder) costs about 8d per lb, and the hydrated lime about 1s 6d for a 7 lb. tin. The lime should be stored in an air-tight container, and should be used fresh. Any carry-over should not be used the following season.

The strength at which to apply Bordeaux mixture in control of most diseases during the growing season is 3:4:50—that is, 3 lb. of copper sulphate (bluestone), 4 lb. of hydrated lime, and 50 gallons of water. Proportionate amounts of these ingredients are required when smaller amounts of the mixture are being prepared. Where 4 gallons of spray are to be made, 4 oz. of copper sulphate and 5 oz. of hydrated lime are required. The amounts of the ingredients should be carefully weighed.

The following procedure should be followed when preparing 4 gallons of 3:4:50 Bordeaux:—

(1) Dissolve the copper sulphate in 2 gallons of water in a wooden, earthenware, copper, or glass vessel. Hot water may be used.

(2) Add water to the lime, and stir until it assumes the consistency of paste. Then dilute it with 2 gallons of water.

(3) Mix the two solutions, stirring vigorously while doing so.

The spray is then ready for use. It should be used immediately, as it loses in effectiveness if kept for any time. When the crop requires a further spraying a fresh mixture should be made.

# Guide for the Home Garden

## Green Crops for the Winter

*"This is the time when weeds are shallow rooted,*
*Suffer them now and they'll o'ergrow the garden,*
*And choke the plants, for want of husbandry."*
*—Shakespeare.*

CABBAGE (Savoy, early and late), cauliflower, broccoli, borecole (Scotch kale), Brussels sprouts—these crops form the basis of supplies of green vegetables for autumn and winter use. It should not be necessary to stress the importance, apart from the necessity, of providing supplies of these vegetables; they are essential in the home garden if continuity of supplies of fresh vegetables is to be maintained.

### *Seed Sowing*

The seed of any and all of these varieties may be sown from mid-September to mid-November. If sown in late October or November, the seed should have a greater depth coverage than if sown in early spring or late autumn. From 3,000 to 5,000 plants of these varieties may generally be expected from 1 oz. of seed. If a seedling box is used to raise the plants, it should be 6 in. deep. This depth will permit full root development of the plants, but they can also be grown in an open seed-bed. Whichever method is adopted, it is better to sow the seed in rows rather than broadcast. When ready, the young plants can be taken from the seedling-box or seed-bed and planted where it is intended they should remain until full grown. Particular attention to watering the seedlings is necessary, and occasional dressing of liquid manure—always after a good watering—will be beneficial.

### *Soil*

Good crops of these varieties may be grown on light soil, but the best results are obtained in a heavy loam, rich in organic matter, and well drained. Locations which, during autumn, become heavily saturated with water are undesirable.

### *Fertilisers*

Being gross feeders, these crops require a plentiful supply of plant food. Provided the land is well supplied with organic matter, less artificial fertilisers will be required; otherwise a mixture of 1 lb. of sulphate of ammonia, 3 lb. of superphosphate, and ½ lb. of sulphate of potash should be distributed along the shallow furrows where the plants are to be set. This amount of fertiliser, if purchased at bulk prices, will cost about 7d., and will be adequate for 25 yards of row.

Two subsequent dressings of nitrate of soda or sulphate of ammonia may be necessary should the plants appear to be slow in development. At any rate, one application of the former fertiliser when the plants are about half-grown will be of considerable assistance in stimulating growth. The surest indication of the need for the application of a "straight" nitrogenous fertiliser to any of the varieties under consideration is the appearance on the heavy outside foliage and on the tips of the inside leaves of a hard, bluish-purple colour. When these signs appear, nitrate of soda—just a good pinch that can be held between the thumb and the first two fingers—is applied to each plant after a good watering has been given and hoed in. An improvement in the colour of the foliage should be clearly seen within a week. This direction applies particularly to cabbage and Brussels sprouts, the latter crop being greatly benefited by applications when the sprouts begin to develop.

Where cruciferous crops are being sown, liming should not be neglected, and an annual dressing of agricultural lime at the rate of 4 oz. per sq. yd. should be given. In addition to liming, and as a further prevention against the development of club-root, a three-year rotation of crops should be practised.

### *Planting*

Twenty-four hours before removing the seedlings the seed-bed should be

This box, made from an apple case, contains 120 cauliflower plants.
*[A. L. Bryant, photo.*

### Seasonal Don'ts

**Don't**

**neglect the crops which will produce food from the garden during April to October. During November seeds of seed beans, marrows, pumpkins, swedes and plants of Brussels sprouts, celeriac and kumaras may be planted out. Crops which have been planted previously, such as maincrops of beetroot, carrots and parsnips, onions and potatoes, and the seedlings (not yet ready for transplanting) of borecole, broccoli, cabbage, cauliflower, leek, silver beet should all receive special attention.**

**Don't**

**plant broad beans at this season. They are a cool weather crop, and, if grown during the summer, become infested with disease and pests. There are plenty of other varieties of beans which grow satisfactorily during the summer season.**

# What to Do in the Garden Next Month

## *Summary of Operations During November*

### VEGETABLE SECTION.

SUCCESSIONAL SOWINGS.

**Beans, corn, lettuce, peas (Onward, W. F. Massey and Alderman), radish, turnip.**

OTHER SOWINGS.

**Cucumbers, marrows, pumpkins, swedes (in cold situations).**

SEEDLINGS TO TRANSPLANT AND PLANTS TO SET.

**Brussels sprouts, cauliflower, celery (sown July-Aug.), celeriac, cucumbers, melons (before the end of the month), capsicum, egg plant, tomato, lettuce, kumaras (complete planting before the end of the month). Potato, a late planting may be made, but it is better completed last month.**

PERENNIAL CROPS.

**Asparagus, discontinue cutting at the end of this month and manure the plantation.**

CROPS IN SEASON.

**(The month in brackets represents the month of sowing the seed.)**

**Greens.—Asparagus, broad beans (May), dwarf beans (Sept., warm districts), cauliflower (Mar.-Apr.), peas (Aug), silver beet (last of crop).**

**Roots.—Carrots (Aug.-Sept. shorthorns), beetroot (Aug.-Sept.), new potatoes (July-Aug. earlies), turnips (Sept.).**

GENERAL WORK.

**Tie up and remove side shoots from early planted tomatoes.**

**Keep the surface of the ground loosened to destroy weeds and to conserve moisture; especially should this be done after a shower of rain.**

**Apply liquid manure to salad crops.**

**Thin out seedling crops.**

### SMALL FRUITS SECTION.

**Cape Gooseberries.—Transplant seedlings.**

**Strawberries.—Apply straw mulch, and if the ground is not very fertile, apply guano at the rate of 1½ oz. to the square yard (4 cwt. per acre) or sulphate of ammonia at 1 oz. to the square yard. The mulching should be completed before the berries set.**

**Raspberries and Loganberries, etc.—Tie up before the crop matures. With raspberries, two wires on either side of the row with supporting wires between should be sufficient.**

**Gooseberries.—With harvesting in progress, it is permissible to prune very lightly to thin out the bushes. By this means picking is made easier.**

### FLOWER SECTION.

**Plant gladioli.**

**Plant out seedlings as spring flowering annuals are removed and the ground cleaned up.**

**Plant out dahlias and chrysanthemums.**

### GLASSHOUSE SECTION.

**The tomato glasshouse should be well ventilated to control tomato leaf mould, which, if it appears, is best controlled by the modern salicylanilide spray applied at the maker's recommendation.**

given a thorough soaking. Young plants removed for transplanting should be dug or eased out. This method will conserve the whole developed root system which is so necessary for the quick establishment of the plants after setting. If the soil is inclined to be dry, the plants may be "puddled" before setting. "Puddling" consists of dipping the roots in a thick mixture of soil and water, and when this is done the plants are less likely to suffer a severe check after transplanting. It is also an advantage to cut about an inch off the tap-root in addition to cutting away the greater part of the large leaves of the plants.

Immediately the young plants are set out they are likely to be attacked by aphis and the cabbage worm, the latter being the larva of the white butterfly. As an immediate protection against these pests, the whole of the green growth of the young plants may be dipped before planting in a mixture made in the following proportions:—

1 tablespoonful of arsensate of lead (powder).
3 tablespoons of hydrated lime.
1 gallon water.

The quantities can be reduced proportionately to meet individual requirements.

The plants may be set so that the centre growth is above ground-level and the soil made firm on the root. The surface around the plant should be left the shape of a saucer, which will, for a time, serve as a retainer for water when applied, and will be an advantage if the plants are watered immediately after setting.

Planting distances will vary according to variety.

### *Savoy Cabbage*

In a home garden where cultivation is carried out entirely by hand, 14 inches apart in the row will suffice. If more than one row is planted, 18 inches should be allowed between the rows, and the plants in each row set opposite the space between the plants in the adjoining row. For horse or mechanical cultivation, 27 inches between the rows will be necessary.

Varieties recommended for planting are:—Early: Drumhead Savoy; Best of All. Late: Omega.

### *Cauliflower and Brussels Sprouts, etc.*

These will require more space—18 to 20 inches between the plants, and 24 to 30 inches between the rows (according to methods of cultivation) will be adequate for full development.

To obtain highest quality heads of cauliflower and broccoli it may be necessary to tie loosely together near the top the tall outside leaves of the plant as soon as the curds begin to form. By this means the bright light will be excluded and the heads will develop that desirable and attractive whiteness. Only seeds of a quick-maturing variety of cauliflower should be sown at this period, and Phenomenal Early is recommended for November sowing. It should be ready to harvest before it is affected by hard frosts. Seed of broccoli is available which, sown in October and November, will mature in succession from May to September.

Scotch kale (borecole) is a vegetable which will stand very severe frosts, and is an excellent winter green. It is particularly valuable for its calcium, iron, and iodine. There are two varieties—Tall Green and Dwarf Green.

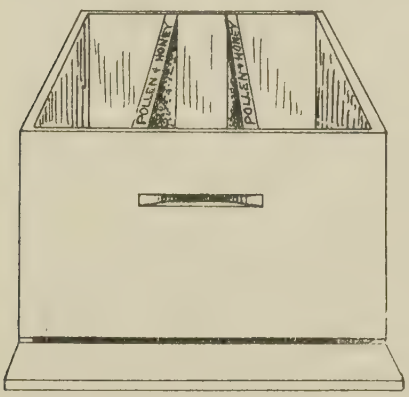
Brussels sprouts should be more extensively grown, especially in the farm garden, where there may be sufficient space for larger plantings. The young sprouts are a delicious change in the vegetable dietary. Regularly picked,

*(Continued on page 343)*

# Seasonal Work for Beekeepers

## Raising Queen Cells

BEFORE swarming, the bees usually build queen cells along the bottom edge of the brood-combs or where there is some irregularity of the comb surface. Eggs laid by the queen in cell cups prepared by the bees hatch in approximately 72 to 76 hours, depending upon the temperature maintained in the hive. When hatched,




**Cell-starting colony. First position of pollen combs.**

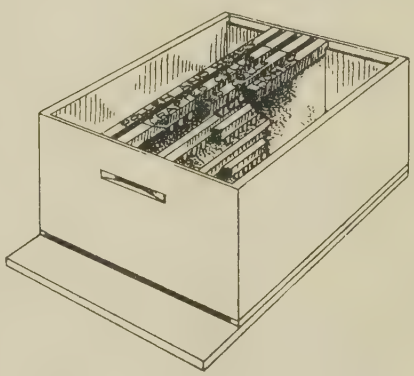
the larvae are fed by nurse bees with a concentrated food called "royal jelly" for the next five and a half days. The queen larvae actually float in a bed of food, and in both natural and artificial queen production the best queens are produced when there is an extra strong force of nurse bees able to prepare this special food in abundance.

At the end of the feeding period the bees seal over the cells, and each young larva, after consuming a further quantity of food, spins a silken cocoon, lining the cell, and then takes a complete rest for about 24 hours, when the outside skin is shed. The body parts and some of the appendages, although not fully developed, are now visible, and the pupa, which is white at this stage, gradually changes colour and develops into an adult virgin queen ready to hatch on the sixteenth day. During this briefly-described stage of development it is very important that the queen cells should not be handled or bumped in any way. They may, however, be handled with safety on the fifteenth day, provided the cells are kept warm in a natural hanging position and not jarred unduly.

### *Methods Used*

As indicated in last month's notes, queen cells taken from colonies preparing to swarm may be used to advantage, but this practice is not recommended, because the tendency to swarm excessively may be carried on to the next generation. It is therefore desirable for the beekeeper to raise cells for requeening purposes from selected stocks in the apiary. There are many successful methods used, and the following method, known as the Pritchard forced cell starting colony, and described by Jay Smith, is quite good.

"All combs, including the bees, brood and queen of a medium colony (not a strong one) are removed from the hive. Two combs of pollen and honey are selected and placed back in



**Cell-starting colony. Position of grafted cells and pollen combs.**

the hive. Two frames for holding cell bars (without the cell bars) are placed in the centre of the hive and the pollen and honey combs moved over next to them. A division-board feeder containing thick syrup is then placed on either side, and the remaining space filled with empty combs or division boards.

"The two cell bar frames are now removed, and all other combs of brood and honey are shaken free of bees into the space vacated, taking care not to get the queen which should be caged.

"The brood and the caged queen of the original hive are now put in the upper storey of a strong colony over a queen-excluder for safe keeping. In from half an hour to one hour's time, or as soon as the bees in the made-up colony set up a roar of distress when they have discovered their loss of queen and brood, the two cell-bar frames are supplied with prepared cells, and are placed in the open space in the centre of the hive.

"The queenless and broodless bees are in excellent condition to carry on with feeding, and will immediately accept and supply the prepared cells with the right food. The two feeders containing thick syrup and the two combs containing pollen and honey will give the bees all that is necessary for making more food to place in the queen cells.

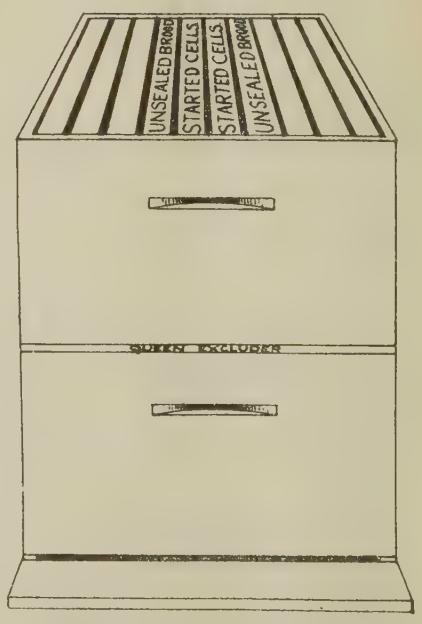
"The prepared cells will usually be accepted and lavishly supplied with food in about 24 hours. When nicely started, they should be removed and placed in cell-finishing colonies, and the brood and the queen should then be restored to the colony.

"While this method of starting prepared queen cells saves extra equipment, and may be practised at any time when conditions are right without confining the bees, fundamentally the principle is the same as the swarm box method."

The secret to successful acceptance of cells is proper feeding, and also that an ample supply of fresh pollen is available to the bees, not only when the graft is given, but for at least three days beforehand.

### *Grafting*

Colonies selected for grafting should also be fed for two or three days be-




**Finishing colony. Position of unsealed brood and started cells.**

forehand if there is no nectar coming in at the time. Larvae approximately 12 to 24 hours old should be used. The bees will not readily accept larvae just hatched, and poor queens will be obtained where the larvae is much more than 24 hours old.

Where the beekeeper is in doubt as to the size of the larvae to be taken or the correct procedure and appliances to use, the Apiary Instructor for the district should be consulted in the appropriate season and asked for a suitable demonstration.

### *Cell-finishing Colonies*

During the 24 hours the selected larvae are in the starting colony, the cell cups are remodelled into queen cells by the bees and feeding of the larvae is begun. The only work to be done by the finishing colonies is to keep up the right temperature in the hive, continue feeding the larvae as required, and build the cells to a finish. These colonies should be strong, and each should occupy two brood chambers with a queen-excluder between.

Early in the season when the bees have built up to good strength, all empty combs in the brood nest should be removed and replaced with capped brood taken from other colonies in the apiary, but care should be taken not to give them more brood than the bees can cover and care for. Six to eight frames of capped brood, according to the strength of the colony, may be placed above the excluder in each hive after shaking off the adhering bees, and later, when both chambers above and below the excluder are full of bees, the colonies are ready to undertake the work of cell finishing. The prepared cells should be placed in the centre of the upper chamber between two frames containing unsealed brood, where they will receive the immediate attention of the nurse bees. On the tenth day after grafting the cells will be ready for use in colonies to be requeened or where increase is made.

Cell-finishing colonies should be fed steadily according to requirements, and not more than 20 to 25 cells given to each to finish in the manner described.

*—T. S. WINTER, Senior Apiary Instructor, Wellington.*

### CHANGE OF HEADQUARTERS

Beekeepers are advised that the headquarters of the Apiary Instructor for the Otago-Southland district has been changed from Dunedin to Invercargill. All inquiries and correspondence should be addressed to:—The Apiary Instructor, Department of Agriculture, P.O. Box 825, Invercargill.

GREEN CROPS FOR WINTER—Continued from page 341

they will continue to supply domestic requirements for several weeks.

### *After-care*

To combat the activities of the white butterfly during the growing season, arsenical spray or dust may be used until the edible portion of the plant begins to form, after which the use of Derris, either in spray or dust form, is recommended.

All the cabbage family require considerable quantities of water, which must be supplied if best results are to be attained. At all time, but more particularly during the early stages of growth, the plants must never be permitted to suffer through lack of water. In dry weather aphis will be more troublesome than when moist conditions obtain. Hoeing for weed destruction and to prevent undue evaporation of moisture from the soil must be attended to (see heading to these notes).

*—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.*

# Care of Tomato Plants

PRUNING is a necessary and particular part of successful tomato production. This should begin by removing the "shoots" which grow at the junction of the leaf and main stem. The shoots should not be cut; they can more easily be removed by side pressure of the thumb. Removal is best done when the shoots are young, and on no account should they be allowed to develop. They rob the plant of necessary moisture and valuable plant food, and are highly susceptible to disease.

When the plant has reached a height of 12 inches to 15 inches it will be seen to have divided into two main stems, and, if it has been decided to adopt the single stem method of growing—as previously advised—one of these stems must be removed.

Close examination of the plant will show that on one stem—invariably the stronger and just above the Y junction of the two stems—a short lateral growth is bearing a bunch of flowers. The stem on which this growth has appeared is the one which must **not** be removed. With a sharp knife and an upward cut, remove the other—the weaker stem—a short distance above the junction referred to.

### *Tying*

As the plant develops and tying becomes necessary, it would be well to adhere to the system advised in the October issue of the "Journal" for the fastening and tying material. When passing the raffia round the plant to bind it to the stake, great care should be taken to see that it passes under a leaf and as close as possible to the main stem. Fastened in this manner, the plant is held securely. The tying material cannot slip down the stake, and consequently the subsequent weight of fruit will not bend the main stem of the plant, thus preventing the bottom truss of tomatoes from resting on the soil, which often causes the fruit to start rotting.

### *Spraying*

While crop rotation and strict attention to proper cultural practices will go a long way to check the incidence of disease among garden crops, it should be recognised that spraying is essential to protect tomato plants from attacks of fungoid diseases and destructive pests. Bordeaux mixture, as described in this issue of the "Journal," should be regularly sprayed on the plants at least once every ten days. To ensure adequate protection, the under-side of the leaves of the plants should receive the same attention as the exposed parts, and the stem should be treated similarly.

The quantity of spray applied should not be stinted, as the resultant crop will amply repay any additional cost involved. Purchased in bulk, the ingredients necessary to make 5 gallons of Bordeaux mixture will cost less than 3d. A warm, sunny, windless day is ideal for spraying, but the spray should not be applied when the plants are wet with dew or rain. A sharp look-out will need to be kept for the appearance of the light-green, velvety caterpillars, commonly known as the tomato worm. If and when these are observed, add arsenate of lead (powder form) to the Bordeaux mixture at the rate of 1 oz. to 2½ gallons. Mix the arsenate powder in a small quantity of water to a cream consistency before adding to the spray. Spraying, it should be understood, is not a remedy for the blight; the mixture is applied as a preventive. Once the plants become affected, spraying is useless.

Close attention should be paid to cultivation, and shallow hoeing—preferably with a MacKinnon hoe—is recommended in order to destroy weeds and conserve soil moisture.

*—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.*

# Coccidiosis of Fowls

COCCIDIOSIS is one of the most destructive diseases of poultry, and is probably the most prevalent infectious disease attacking poultry in New Zealand. This disease has been reported from many districts in both islands, and the annual loss among infected birds is heavy. It is, therefore, of considerable importance that poultry-keepers should be able to recognise an outbreak of coccidiosis and to know what steps to take to bring such an outbreak under control.

By F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

## *How to Recognise Coccidiosis*

There are two main forms of coccidiosis among poultry. These forms may be distinguished by poultry-keepers according to the age of the birds attacked. The first, or more acute, form attacks young chickens between the ages of approximately two to eight weeks. This is referred to as caecal coccidiosis, as the internal parasites causing this disease attack mainly the two caeca or blind guts. Often, the first sign of trouble is the presence of one or more dead chickens in a pen, and later the remainder become loose in feather, tend to huddle together, droop their wings, and close their eyes.

Coccidiosis of chickens. Affected blindguts (caeca) showing three stages of the disease. (*a*) Small haemorrhages in slightly enlarged caeca; (*b*) haemorrhagic contents in enlarged caeca; (*c*) almost pure blood in greatly enlarged caeca.

A careful examination of the pen will reveal droppings containing blood. If a dead chicken is opened the caeca will be found inflamed and distended with blood.

In outbreaks where the disease is less acute, birds may not die so rapidly, and merely show ruffled feathers and general unthriftiness. On opening such birds it is often difficult to detect blood in the caeca, although they are usually enlarged. In these circumstances dead birds should be forwarded to the laboratory (see address at end of article) for examination, and a definite diagnosis of the trouble obtained.

The second form of coccidiosis is encountered in older birds, and is not so easy to recognise. This form usually attacks well-grown pullets before coming into lay or when they have been in lay for a few weeks. Birds so attacked show signs of looseness of feather, a false moult, or a drying-up of the comb. These symptoms may be accompanied by lameness in one leg and a loss of eye colour. If such birds are left in the pen they lose condition and gradually "go light." While mortality is not necessarily heavy, birds affected in this way rarely recover, and are a big source of danger to healthy stock.

This form of the disease is referred to as duodenal coccidiosis, as the parasites attack the lining of the small intestine or duodenum. Unfortunately, it is not always easy to recognise this disease by an inspection of the small intestine with the naked eye. It is therefore essential to send typically unhealthy birds to the laboratory for a microscopic examination whenever this disease is suspected. Of the forms described, the second is the most dangerous and should be brought under control as soon as possible. Duodenal coccidiosis may mean the loss of many valuable pullets, resulting in a serious loss in egg production.

## *Cause of Disease*

While it is not essential that a poultrykeeper should know the complete life history of the internal parasite causing coccidiosis, some knowledge is an aid to understanding why certain sanitation methods are so important in the control of an outbreak of this disease. Such knowledge also

**APPLICATIONS** (to be submitted on P.S.C. Form 17A, obtainable at principal Post Offices) with **COPIES ONLY** of testimonials, will be received up to noon on **31ST OCTOBER, 1941**, for the position of **POULTRY INSTRUCTOR**, General Division, 2nd Grade, salary £305, maximum £335 per annum, in the **DEPARTMENT OF AGRICULTURE** at **AUCKLAND**. In addition to salary Public Service bonus at the rate of £13 per annum is payable.

It is desired that applicants should have a good practical knowledge and experience of commercial poultry farming, have ability to impart knowledge and give advice on all aspects of poultry keeping by way of demonstrations and lectures, and be able to write informative articles on any subject relative to the business of poultry farming. Applicants should give full information regarding their military obligations. The successful applicant will be required to bear any expenses incurred in travelling to take up appointment.

Secretary,
Public Service Commissioner,
Wellington.

makes it easier to understand why the possibilities of successful medicinal treatment are so limited.

Coccidiosis is caused by an organism which is invisible to the naked eye. Coccidia are not confined to domestic fowls, but also occur in wild birds and most animals. Fortunately, those species found in animals and birds do not infect poultry, but wild birds will occasionally spread the disease by carrying coccidia organisms on their feet. This may account for some of the sudden outbreaks observed from time to time on new farms and on farms where the disease has not previously been observed.

Coccidia pass through a complicated life history, but two main phases of this life cycle are of interest to poultrykeepers. The first stage is when the organisms are living and multiplying in the bodies of infected birds and thus setting up the disease, while the second stage must be completed outside the birds in litter or in the soil over which birds are running. This second stage occurs after the organisms have passed out of infected birds in their droppings. Healthy birds may now pick up these coccidia-infested droppings when feeding, but these organisms must undergo a change, which takes from two to four days, while outside a bird's body before they can infect a healthy bird. This is of considerable importance, as will be seen later.

The digestive system of a fowl. No. 1 is the small intestine, and No. 3 the caeca.

A further important fact is that during the second stage spent in the soil the organisms are well protected against cold, draught, and heat, and may, under favourable conditions, remain alive for as long as a year. It is also important for the poultrykeeper to realise that while the organisms are living and multiplying within an infected bird they are embedded in and destroying the delicate lining of the caeca or small intestine.

### *Treatment and Control*

No entirely satisfactory medicinal treatment for either caecal or duodenal coccidiosis has yet been found. Medicines which are strong enough in chemical action to destroy the coccidia will also destroy the delicate lining of the intestine itself. On the other hand, it is thought that if an acid condition is set up in the intestines of infected birds the multiplication of the coccidia is checked, while a mild scouring of the bird is set up which causes a large number of the organisms to be carried out in the droppings. It has been seen that these organisms are not able to infect healthy birds for two to four days after leaving the infected birds, so that if these coccidia are removed by the careful cleaning of the house they can be burnt before again becoming dangerous. It has been found that this method of attempting to overcome an outbreak is more effective against caecal than duodenal coccidiosis.

While it is not intended to suggest that treatment for caecal coccidiosis in this manner is always effective, the following method has been found useful on a number of occasions under practical conditions. **Success depends to a great extent upon noting an outbreak at an early stage and acting immediately.**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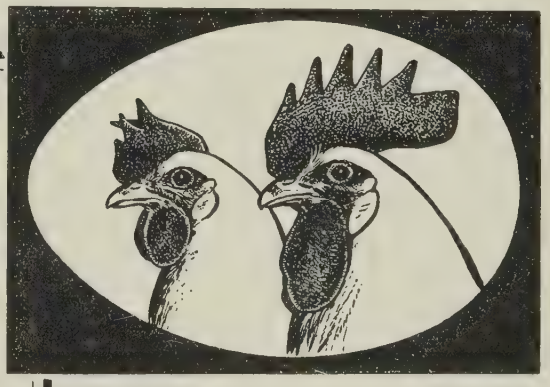

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Confine the young chickens to their brooder house pen and remove all food for 12 hours. Next, supply a liberal amount in ample hopper space of a chicken mash containing 40 per cent. dried milk powder. Leave this special mash before the birds for 24 hours and then remove. Now feed in the ordinary manner for 24 hours, and clean out the pen thoroughly at the end of this time. Starve again for 12 hours, give the 40 per cent. milk mash for 24 hours, and two days later give a second thorough cleaning to the pen. While carrying out this treatment kill off any birds which are obviously heavily infected with the disease. Such birds are unlikely to recover, and are the main source of danger to the healthy ones. Remember, the whole chance of success depends upon cleaning the pen and equipment effectively after each feed of the milk mash.

Properly soured milk may be used instead of the milk mash described. In this instance, the sour milk is given as the only drink available to the chickens for 24 hours, and then a thorough clean-out of the pen made 48 hours after giving the milk. This may be repeated twice, but because of the acid condition of the milk it should not be given in metal drinkers.

It is claimed that treatment with vinegar or Epsom salts has a similar affect to the "milk flush" described above. While vinegar and Epsom salts are cheaper than milk powder, the latter has a very definite value as a food, and is particularly helpful to birds suffering from a check due to disease. The main point to note in this type of treatment is not so much whether milk, vinegar, or Epsom salts is used, but that success depends essentially upon the efficient and regular cleaning out at the times stated. Only by the removal of the coccidia which infect healthy birds can this disease be properly controlled.

Medicinal treatment is rarely satisfactory in duodenal coccidiosis. Poultrykeepers must realise that the best method when well-grown pullets are attacked is that of rigid culling and strict sanitary measures. Any attempt to retain and treat infected birds is not a sound policy, and will in most cases result in greater total losses finally than if an **early** attempt is made to cull out every sick bird. The infected flock should be confined to their house and the litter changed frequently until the infection dies down. Wire-netting must be placed in front of and under the perches to stop the birds having access to the droppings which accumulate during perching hours. Drinking and feeding equipment should be kept clean and thoroughly disinfected from time to time. Poultrykeepers who are in the habit of feeding dry mash are advised to use the wet mash system during an outbreak, and all troughs should be picked up and placed out of the reach of the birds immediately a wet mash feed has been completed. Grain should be fed in a clean trough and not in the litter.

### *Treatment of Housing and Runs*

As soon as a house can be freed of birds after an outbreak of coccidiosis —whether caecal or duodenal—the floor and walls (for the first 18 inches up) should be scraped and thoroughly scrubbed with caustic soda. If the floor is wooden, this treatment should be followed by a coat of creosote or a mixture of two-thirds creosote and one-third kerosene. Care must be taken to clean all dirt out of holes and cracks between boards.

Where a grass or soil run outside the house is suspected of being contaminated, the area immediately around or in front of the house should be heavily dressed with quick lime and dug over. The run should then be spelled for as long as is possible.

### *Prevention*

While all birds are liable to be attacked with coccidiosis, it is certain that birds of weaker constitution, whatever their age, are more prone to this disease and suffer most if attacked by it. Therefore, **the first essential in prevention is the maintenance of constitution throughout the stock by sound breeding methods and good management.** Breeding from poor stock.


**• special announcement**

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small for the breed they represent, and lacking in real vitality, is the first step towards encouraging an outbreak of this disease.

It is also a well-established fact that damp litter and floors give ideal conditions for coccidea, so that for the prevention and control of coccidiosis it is important to avoid dampness at all times in both brooder and laying houses. This rule particularly applies to areas around drinking vessels. As droppings are a source of danger, it will be realised that the large quantities which collect under the perches must intensify this danger where the flock are allowed unrestricted access to such droppings. It is therefore suggested that where coccidiosis has once occurred and may easily break out again, the area under the perches should be wired off against the birds in the house. Floor space may be lost, but greater safety is attained.

As a safeguard against contaminated runs, annual dressings of quick lime, applied in the winter when the run can be spelled, are advised. The draining of wet runs is a further safeguard against outbreaks.

Where farms have been free from outbreaks of coccidiosis, special care should be taken at any time when fresh stock or hatching eggs are introduced. The eggs should be dipped in methylated spirits and allowed to dry before setting, while fresh stock should be placed in a quarantine pen for at least a fortnight and be kept under close observation.

### *Where Help Can Be Obtained*

The need for recognising the disease as soon as possible and then of acting quickly has already been stressed as an essential in effective control. It has also been stated that difficulties arise in recognising the disease if it is not present in an acute form. For these two reasons poultrykeepers are strongly recommended to forward suspected birds—two or three if possible—to the Chief Diagnostic Officer, Animal Research Station, Wallaceville. A thorough examination will be made and a report sent back to the poultrykeeper without delay. If serious losses are occurring it is also recommended that the poultrykeeper seek the services of the local Poultry Instructor by writing him at the Department of Agriculture, Auckland, Wellington, Christchurch, or Dunedin, according to the district. Delay is dangerous—act immediately.

## *Cool Storage Notes*

# Examination of Stocks in Storage

AT this time of the year the cool storage stocks have been reduced, and a number of chambers are holding only relatively small quantities of fruit. It would be advantageous if these small quantities could be transferred to one or more chambers so that these chambers may be filled with fruit, as by this means the correct flesh temperature can be more easily maintained and fluctuating temperatures detrimental to the fruit may be avoided. The Sturmer variety should be placed in a separate chamber owing to the necessity for holding them at a higher temperature. Other varieties, such as Granny Smith, Delicious, and Dougherty, may be held together in another chamber at a lower temperature.

The cool storage stocks of apples and pears now being held to supply the market requirements until the end of the year should have been thoroughly examined. Varieties of apples such as Sturmers, Granny Smith, Tasma, Dougherty, and Delicious may be held for a longer period provided they were picked and placed in cool storage at the correct state of maturity and held under favourable cool storage conditions. This also applies to pears still held. The Winter Nelis variety should be carefully inspected, as rots are subject to develop from injury and cause loss by contact with surrounding fruits in the case. Winter Cole and P. Barry should also be carefully examined, as excessive wilt or rots may develop.

During August the Dougherty and Frimley Beauty varieties held at unsuitable storage temperatures developed superficial scald. This form of scald is brought about by the accumulation within the apple tissues of certain gases which are produced by the apples themselves as a result of respiratory activity. Therefore, the lowest temperature at which the variety can be safely held is the best temperature to check respiratory activity and the advancement of maturity, which eventually bring about the accumulation of gases which cause this form of deterioration. Superficial scald will develop more readily on poorly-grown fruit and on fruit which is immature when it is held at unsuitable storage temperatures.

Faulty or insufficient ventilation and close stacking of fruit will increase the percentage of loss. Open stacking which will provide air circulation will contribute to the prevention of superficial scald in storage by assisting to maintain the fruit at a low, even, flesh temperature.

The Dougherty and Frimley varieties need to be matured and well coloured when picked and placed in cool storage, and should be held at 33 degrees F. flesh temperature.

The Granny Smith variety is responding to a delay of from 10 to 15 days after picking and before cool storage, as superficial scald is not developing on the fruits either during cool storage or after removal. The use of the oil wraps is also assisting in the prevention of scald and the development of lenticel rots on this variety.

To prevent wilt development in fruit held in cool storage, and also to preserve its natural bloom and appearance, 90 per cent. relative humidity is desirable in the rooms. An accurate check of the relative humidity of the storage atmosphere throughout the season would greatly assist in improving the results obtained with fruit, particularly when the varieties are susceptible to wilt development and are being held for long storage.

*—A. A. POWELL, Cool Storage Officer, Wellington.*


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# Federation of Young Farmers' Clubs

## Meeting of Canterbury Y.F.C. Council

GENERAL policy and inter-district activities were discussed at a meeting of the Canterbury Y.F.C. Council held at the Canterbury Chamber of Commerce, Christchurch, on August 27.

Reporting on the inter-district debating competition held at Ashburton on August 21, in which club teams from South, North, and Mid-Canterbury took part, the chairman announced that the competition was won by the Methven Club team, with Waihaorunga second, followed by Darfield and Cannington. It was decided to invite the winning Otago-Southland Club team to compete against the Methven team at a competition to be held in South Canterbury on September 27. Arrangements for the inter-district stock judging competition to be held at Winchester on the same date were well under way, and it was expected that good support would be forthcoming.

An interesting discussion on stock judging systems took place in which the point system, the Federation's system, and the oral system were reviewed. Points arising out of this discussion were: the necessity for providing adequate pen space for stock, that too many competitors should not be allowed to judge in a pen at any one time, and the desirability of parading stock so that competitors get every opportunity of seeing the stock properly. It was decided to suggest to the South Canterbury District Committee, which is organising the inter-district competition to be held in Winchester, that oral questions might be asked competitors who place their stock in good order.

Various means of maintaining interest among the clubs were discussed, and among these the formation of discussion groups in which a group of club members would meet at some convenient centre within their district to discuss a project of some kind, which would later be discussed at the club meeting, was considered likely to prove of great value and well worth a trial.

It was decided to send a copy of the minutes of the meeting and also of the annual meeting of the Federation to the past Chairman of the Council, Mr. D. Coleman, who is at present serving with the forces overseas.

The following were present at the meeting:—Messrs. A. D. Talbot, chairman, Alan Grant, J. Barclay (South Canterbury), H. L. Chisnall (Mid-Canterbury), F. A. Sheat (North Canterbury), J. W. Calder, J. W. Stewart, H. G. Stephens, T. E. Streeter, L. W. Blackmore, Secretary (Christchurch), and R. J. Low and S. Freeman, Dominion Organising Secretary.

## Horowhenua District Field Day

By G. F. GIMBLETT, Levin Y.F.C.

A SUCCESSFUL field day was held recently on Mr. H. J. Lancaster's property "Fairfield," Levin, under the auspices of the Horowhenua Y.F.C. District Committee. The programme consisted of stock-judging competitions, demonstrations, and lectures. There was a large and representative attendance, including members from the Levin, Shannon, Opiki, and Tokomaru Clubs, and the Dominion Organising Secretary, Mr. S. Freeman, was present.

The first event, a dairy cow judging competition, began at 10.45 a.m., Mr. I. D. Parsons being the supervising judge. This was run on the usual lines, the three animals being paraded in a ring for five minutes and then lined up for handling by the competitors for 25 minutes. The cards giving the placing and the reasons had also to be filled in during this time.

This was followed by a demonstration on a dairy cow by Mr. Lancaster. In a general outline, Mr. Lancaster said that conformation was the first thing to look for in a dairy animal, whether she were for dairying or breeding purposes. Constitution came next. He then went on to describe the triple wedge-shaped body of a good cow, the points to look for in a good head, and how a good udder should be well caught up both before and behind. Other points mentioned were the pin bones, the tail setting, and the back line, all of which combined to make the perfect animal.

The winners of this competition were:—A. Horn (Levin), 1; N. Liggins (Tokomaru) and R. Vile (Opiki), equal, 2; A. Moody (Tokomaru), 4.

The sheep judging competition was something new in the judging line. Mr. S. B. Mexted was the supervising judge. Three Southdown rams and three Romney ewes were separately penned, and had to be placed by the competitors in pairs as they thought most suitable for fat lamb production. Mr. Mexted then gave his placing and a short demonstration. He pointed out that most people would agree that a big-framed sheep with fine dense wool, a sheep standing square on its legs, with a short neck and with a minimum of wool on the head, was most suitable for fat lamb production.

The winners of this competition were:—B. Bartholomew, 1; P. Carter, 2; R. Speedy and O. Candy, equal, 3.

Mr. V. C. Lewis, chairman of the district committee, presented a cup for a teams competition, and this was won by Messrs. A. Horn and B. Stewart, of the Levin Club.

After lunch had been served by Mrs. Lancaster, the afternoon's programme opened with an address by Mr. E. Bruce Levy, Director of the Grasslands Division, Palmerston North, on "Recent Grassland Developments." Mr. Levy stressed the importance of certified seed, and contended that really permanent pastures on ploughable land should be restricted to first-class land on which it was possible to carry one cow or six to eight ewes per acre. Stock manure should be used to the greatest possible extent, especially with restricted phosphate supplies. On land carrying one cow to the acre their residue was worth £2 per acre. Early cutting of silage was of great importance if full productive value was to be obtained from this supplementary feed.

The next address was by Mr. J. Hill-Motion, B.Sc., M.R.C.V.S., on "Common Diseases of Stock." He estimated that 75 per cent. of stock diseases were due to malnutrition, and specially mentioned milk fever, staggers, sterility, and sleepy sickness. Quoting many examples, he said that many cases had been improved by topdressing with lime. In milk fever it was generally the best cows which were troubled. In 1906, when the average production per cow was about 120lb. butterfat per year, milk fever was practically unheard of, compared with today when the average production is 240lb. of butterfat per cow. Mr. Hill-Motion gave valuable instructions as to how the farmer can assist in the recovery of the stock once they have contracted the various troubles.

While afternoon tea was in progress Mr. S. Freeman gave a short talk on the Young Farmers' Club movement. The war had been a severe setback, he said, but membership was keeping up remarkably well.

At the conclusion of the day Mr. R. M. Law, jun., who was chairman of the day's activities, thanked Mr. Lancaster for the use of his property and Mrs. Lancaster and her assistants for dispensing the refreshments. In reply, Mr. Lancaster stated that he was only too pleased to assist the Young Farmers in every possible way. He concluded by thanking the judges, Messrs. Parsons and Mexted, and the speakers, Messrs. Bruce Levy and Hill-Motion, for their co-operation in making the field day such a success.

# Wairarapa District Stock Judging

By N. LAMONT, District, Secretary, Masterton.

THE Masterton Young Farmers' Club is to be congratulated on winning the "Point Blank" Challenge Cup for stock judging in the Wairarapa district for the fifth year in succession. This very fine record is the result of consistent, solid teamwork on the part of all members of the club. The youngest club in the Wairarapa, Alfredton, which gained second place, also merits congratulation on its excellent performance.

This year, for the first time, a junior and a schoolboys' section were introduced into the contest, and although more Young Farmers should have competed in the junior section, it was pleasing to note that a considerable number of schoolboys availed themselves of the opportunity. It is to these boys that the clubs have to look for future membership, and their participation in Y.F.C. activities is welcomed.

The results were as follows:—

Point Blank Cup.—Masterton, 1586 points, 1; Alfredton, 1489 points, 2; Carterton, 1150 points, 3.

**Class Results.**

Southdowns.—Senior: Masterton B. 328 points, 1; Masterton A, 289 points, 2; Greytown, 231 points, 3. Junior: Alfredton, 236 points, 1; Masterton, 223 points, 2; Carterton, 131 points, 3.

Romneys.—Senior: Masterton A, 250 points, 1; Masterton B, 210 points, 2; Carterton, 155 points, 3. Junior: Masterton, 125 points, 1; Carterton, 70 points, 2; Alfredton, 54 points, 3.

Pigs.—Senior: Alfredton, 242 points, 1; Greytown, 235 points, 2; Featherston, 220 points, 3. Junior: Alfredton, 195 points, 1; Masterton, 170 points, 2; Carterton, 120 points, 3.

Friesians.—Senior: Featherston, 251 points, 1; Alfredton, 225 points, 2; Greytown, 220 points, 3. Junior: Alfredton, 194 points, 1; Masterton, 174 points, 2; Carterton, 141 points, 3.

**Individual Results.**

Southdowns.—Senior: G. Buick, Masterton B, 173 points; A. Cruickshank, Masterton B, 155 points; N. Wyeth, Masterton A, 153 points. Junior: W. D. Buick, Masterton, 128 points; B. Napier, Alfredton, 126 points; F. McDonald, Alfredton, 110 points. Schoolboys: J. Madden, Masterton, 108 points; R. Boyne, Masterton, 103 points.

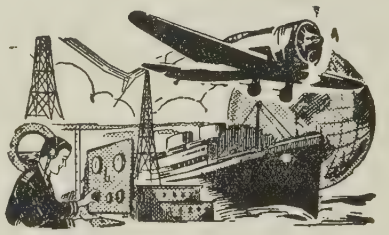
Romneys.—Senior: G. Blatchford, Masterton A, 145 points; J. McKay, Masterton B, 125 points; A. Southey, Masterton A, 105 points. Junior: P. Evans, Masterton, 80 points; W. Cruickshank, Masterton, 45 points; H. Staples, Carterton, 40 points. Schoolboys: J. Madden, Masterton, 81 points; M. Hoar, Masterton, 63 points; D. Fell, Masterton, 61 points.

Pigs.—Senior: R. Ingley, Greytown, 135 points; J. Warrington, Featherston, 130 points; S. Smith, Alfredton, 127 points. Junior: F. McDonald, Alfredton, 115 points; S. Donald, Masterton, 95 points; J. Hercock, Carterton, 80 points. Schoolboys: P. G. Evans, Wairarapa College, 140 points; R. Dagg, Wairarapa College, 110 points; C. Richardson, Wairarapa College, 95 points.

Friesians.—Senior: A. Heckler, Alfredton, 165 points; A. Weatherstone, Featherston, 160 points; H. Miller, Masterton B, and H. McKenzie, Carterton, 140 points, equal. Junior: R. Seymour, Alfredton, 110 points; F. McRae, Masterton, 95 points; J. Hull, Alfredton, 84 points. Schoolboys: A. R. Parker, Masterton, P. Easthope, Masterton, and C. Richardson, Masterton, 100 points, equal; C. Griffin, Masterton, and D. Fell, 89 points, equal.

The clubs gave a good account of themselves generally, although Featherston and Greytown were badly handicapped by not entering junior teams. Had only senior teams been considered, these two clubs would have been placed second and third respectively to Masterton.

The experiment of introducing junior sections appears fully justified, and should serve as further encouragement to the younger members, on whom the strength of the Y.F.C. movement so much depends.

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# Wangauni District Debating Contest

By A. R. DINGWALL, District Y.F.C. Secretary, Wanganui.

THE final of this year's Senior Section of the Wanganui District Annual Inter-club Debating Contest was held in St. Andrew's Hall, Marton, on Thursday, September 11. The trophy, a challenge cup donated by Sergeant Pilot H. Kimpton (former secretary of the Marton Club, and club representative on the District Committee), was won in 1940 by the Mangaweka Club.

This year's final debate was contested by teams representing the Bulls and Taihape Clubs, the subject being: "That a College Education is of More Value Than Practical Farming Experience." The teams were as follows:—Taihape (affirmative): P. J. Bird (leader), J. Gilbert, R. D. Gordon. Bulls (negative): C. B. Anderson (leader), S. Last-Harris, W. Jurgens. Messrs. R. M. S. Jones, Hunterville, and T. C. Kincaid, Taihape, acted as adjudicators. The District Secretary, Mr. A. R. Dingwall, presided. Welcomes were extended to the teams and their supporters, and also to the adjudicators, by the District Chairman, Mr. J. Gilbert, and by the District Secretary.

The debate was opened strongly by the affirmative, but the advocates of practical farming experience were soon offering some keen competition. Serious argument was frequently relieved with humour by all speakers, and a high standard of debating was maintained throughout. The personnel of both teams combined well in their team work, a fact which was favourably commented upon by the judges at the conclusion of the debate.

The judges' award placed the affirmative as the winners by 337 points to 259, and the Taihape Club thereby gained the honour of having provided the champion club debating team for 1941. The adjudicators gave a summary of their impressions gained throughout the contest, and both commented favourably upon the standard achieved by all speakers and the improvement that had taken place in Y.F.C. debating since the inauguration of the district contest.

The trophy was presented to Mr. P. J. Bird, leader of the winning team, by the chairman, who congratulated the team upon its success and upon the high standard of debating evidenced. He also congratulated the Bulls team on the very stout effort put up against such strong opposition. Mr. Bird in reply thanked the chairman for his remarks, and expressed the team's pleasure in being able to carry off the award. He also expressed thanks to the Bulls team for its worthy contribution to what had proved a pleasant and interesting debate. The Taihape team was congratulated by Mr. C. B. Anderson, leader of the Bulls team, and by Mr. R. O. Dalrymple, advisory president of the Bulls Club.

The chairman conveyed the thanks of both teams, and of all Y.F.C. members present, to Messrs. Jones and Kincaid for their making their services available, and for the very capable manner in which they had adjudicated.

# Darfield Club's Field Day

By L. P. McLAUGHLIN, Hon. Secretary, Darfield Y.F.C.

**Group taken at Darfield Y.F.C. Field Day.—At the back, Mr. and Mrs. R. S. Gunn, and to their right, Mr. C. O. Redfern. Messrs. Gunn and Redfern are both advisory members of the club.**

MEMBERS of the Darfield Y.F.C. held a successful field day on the property of Mr. R. S. Gunn, Racecourse Hill, recently. The weather was favourable, and despite the busy period of the year the attendance was good. The field day took the form of judging competitions on Clydesdale horses, dairy cattle, Corriedale and Southdown sheep.

The judges in the various classes were:—Clydesdales, Mr. M. E. Jenkins, well known in Canterbury show-rings; dairy cattle, Mr. L. D. Adams, known throughout Canterbury as a prominent Jersey breeder; sheep, Messrs. R. S. Gunn and C. O. Redfern, also well-known breeders of Border Leicester and Corriedale sheep respectively.

Awards were made as follows:—

Clydesdale Horses.—Archie McLachlan, 1; Frank Jarman, 2; Roland Reed, 3.

Dairy Cattle.—Colin Green, 1; Charles Buttle, 2; Keith Jarman, 3.

Corriedale Ewe Hogget.—Mervyn Jenkins, 1.

Southdown Ram Hogget.—James Duncan, 1; Graham Gunn, 2.

Afternoon tea was served by Mrs. R. S. Gunn, the wife of one of the advisory members.

# Among the Clubs: Reports on Activities

### WESTERN SOUTHLAND.

**Drummond.**—Films exhibited by Mr. A. Stuart, Department of Agriculture, on "Linen Flax" and "Farming in Wales." Mr. Stuart spoke on the growing of linen flax in New Zealand. At the previous meeting there was a general discussion on radio talks, and Mr. J. Kincaid spoke on "The Duties of a Chairman."

### EASTERN SOUTHLAND.

**Five Rivers.**—Lectures on "The Early History of the Five Rivers District" by J. Earl and T. Reidy. At the previous meeting talks were given by Messrs. Andrews and Elder on "Corriedale Sheep" and "Common Sheep Diseases" respectively.

**Otama.**—Discussion on letter from district secretary concerning proposed combined club meeting at Otama, and challenge from Western Southland to an inter-district debate. Movie films exhibited by Mr. S. Mackay.

### SOUTH OTAGO.

**Clutha Valley.**—Three new members enrolled. Discussion on Y.F.C. Experimental Scheme. Address by Mr. McRae, Puketi, on "The Working Sheep Dog."

**Lawrence.**—Mr. J. G. Richards, Department of Agriculture, gave an address on the Y.F.C.

Experimental Scheme; three members agreed to undertake trials.

**Warepa.**—Mr. J. G. Richards, Department of Agriculture, gave an address on the Y.F.C. Experimental Scheme. At the previous meeting representatives of the South Otago Freezing Company addressed the meeting as follows;—Mr. W. W. Luke (manager) spoke on the works generally; Mr. Weir on types of castration and the appearance on a carcass; Mr. A. W. Mayne (meat inspector) on diseases found in a carcass; and Mr. I. Watt (yardman) on the handling of stock.

### CENTRAL OTAGO.

**Upper Clutha.**—Lecture by Mr. S. H. Saxby, Department of Agriculture, on "The Identification of Grasses." At the previous meeting Mr. R. J. Reid, of the Otago-Southland Council, gave a report on the annual general meeting of the federation held at Hamilton. Mr. G. G. Calder, Department of Agriculture, discussed the Y.F.C. Experimental Scheme, and four members agreed to undertake trials.

### DUNEDIN.

**West Taieri.**—Address by Mr. George Bathgate on "Scientific Dairy Farming."

### NORTH OTAGO.

**Enfield.**—Mr. T. A. Sellwood, Department of Agriculture, gave an address on the Y.F.C. Experimental Scheme. Arrangements were made for a radio talk by a club member from 4YA. At the previous meeting arrangements for a club concert were finalised.

**Hampden.**—Radio lecture to be prepared by members for broadcast over 4YA. Mr. J. W. Woodcock (Fields Superintendent, Department of Agriculture, Dunedin) outlined the Y.F.C. Experimental Scheme, stressing various important aspects; a general discussion followed, and a number of members showed a keen interest in the project. The District Y.F.C. Secretary, Mr. T. A. Sellwood (Department of Agriculture) was also present.

### SOUTH CANTERBURY.

**Arno.**—Address by Mr. J. D. Wraight entitled "A Trip Through Victoria."

**Geraldine.**—Arrangements for dance. Entries accepted for inter-club stock-judging competition at Winchester; 12 members to compete. Talk by Mr. A. J. Blackiston on "The Early History of Orari Gorge Station"; the speaker gave his own experiences 40 and 50 years ago on the station. At the previous meeting Mr. Z. O. Sherratt spoke on "The Oil Field Control of the World."

**Mangati.**—Business meeting. Arrangements for Christmas parcels to be sent to members overseas. Proceeds of hare-drive to be given to local Red Cross. At the previous meeting a discussion took place on stock judging; members were nominated to assist the judge at the A. and P. Show; Mr. C. C. Leitch, Department of Agriculture, outlined the Y.F.C. Experimental Scheme, and took the names of several members willing to undertake trials.

**Milford.**—Report on recent district meeting; final arrangements for stock for inter-district stock-judging competitions to be held at Winchester. General discussion on matters of club interest.

**Pleasant Point.**—Several members offered to undertake trials in connection with the Y.F.C. Experimental Scheme. Short talks given by members as follows:—W. Skinner ("Draining the Land"), D. M. France ("Experiences in Wool Buying"), J. Olliver ("Oil Products"), D. Talbot ("Growing of Rape Seed"), R. Talbot ("How and Where Manures are Made"), E. Chittock ("Subterranean Clover"), F. Jackson ("A Tour of the West Coast of Nelson").

### MID-CANTERBURY.

**Hinds.**—Six members selected to take part in inter-district stock judging at Winchester. Sound films, dealing with "Farm Machinery," exhibited by Massey Harris Co.

**Methven.**—Club debate, "That New Zealand's Future Depends on the Extensive Development of Her Secondary Industries." Speakers: C. Wightman, H. Poff, J. McKendry (negative); R. Penny, R. Wightman, A. McKay. The judge, Mr. J. Fleming, gave his award to the affirmative team.

### CHRISTCHURCH.

**Darfield.**—Debate with a team representing the Farmers' Union; subject, "That Farming in New Zealand should gradually come under State Control." Speakers: G. C. Warren, J. H. Buttle, M. B. Gounge, J. H. Syme, J. R. Cullen (Farmers' Union); J. W. Stewart, J. M. Duncan, C. Green, K. Jarman, H. Bedford (Y.F.C.). The judge, Mr. D. O'Connell, gave his decision in favour of the Farmers' Union team. Mr. W. W.


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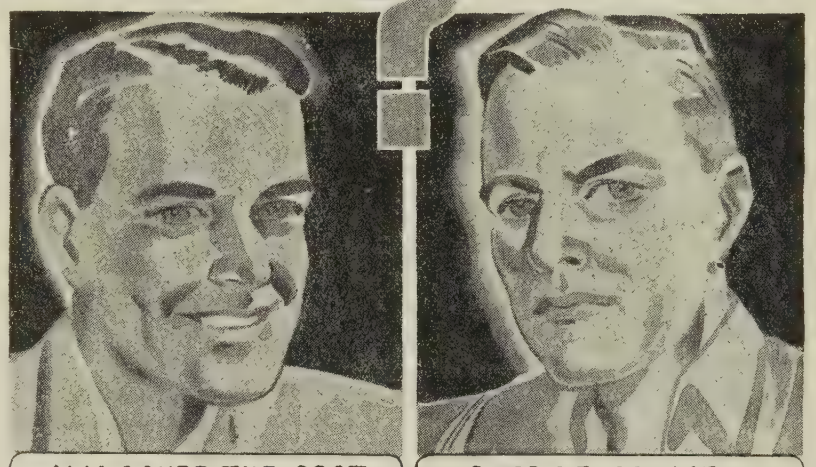

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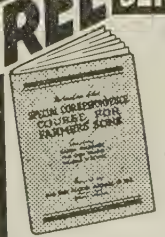

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Mulholland, Dominion president of the New Zealand Farmers' Union, spoke to the meeting.

**Ellesmere.**—General discussion on ways and means of improving club work and getting members more interested in discussions and debates.

**Springston.**—Lantern lecture, on "Linen Flax," by Mr. M. Black, Agronomy Division, Lincoln, and Mr. L. W. Blackmore, Department of Agriculture.

## NORTH CANTERBURY.

**Amuri.**—Members selected to speak at next meeting. Lecture on "Subterranean Clover" by Mr. J. P. Beggs, Department of Agriculture.

**Cheviot.**—Discussion on Y.F.C. Experimental Scheme. Proceeds from ball, amounting to £5, donated to Patriotic Fund. Two club debates were held: "That Breeding Our Own Stock is Preferable to Buying," and "Arable Farming v. Sheep Farming."

**Oxford.**—Debate with the Youth Branch of the Women's Christian Temperance Union on "Do Women Hold More Importance in the World Today than Men?" The Y.F.C. team, which took the negative side of the debate, gained the decision. A short social followed the debate.

**Scargill-Omihi.**—Report on annual ball; profits to be utilised in sending Christmas parcels to members overseas. Short prepared speeches were given by members.

## MARLBOROUGH.

**Blenheim.**—Decided to assist the Junior W.D.F.U. with its annual dance. Motion of sympathy extended to D. Kinzett, a club member, on the death of his father. Presentation to A. Rose, a member who was on "final leave" before going overseas. Address by Mr. G. D. Shand on "Seasonal Animal Troubles."

**Flaxbourne.**—Addresses as follows: "The Need for Lime on Certain Types of Land" (Mr. D. R. Wilkie, Department of Agriculture), "The Plans of the New Flaxbourne Lime Works" (Mr. A. Gunn), and "The New Flaxbourne Lime Company, Its Origin and Future" (Mr. W. Kennington).

## NELSON.

**Moutere.**—Challenge accepted to a debate with the Dovedale Club; subject, "That Farmyard Manures Are Superior to Artificial Manures." Lecture by Mr. R. W. Skinner, Inspector of Stock, on "The Stock Act and Branding." At a previous meeting Mr. Jeffries spoke on "Soil Fertility."

**Murchison.**—Discussion on stock judging competition. Lecture by Mr. D. Merry, Department of Agriculture, on "Pasture Improvement."

## HOROWHENUA.

**Levin.**—Arrangements for dance in conjunction with Junior Division of W.D.F.U. Mr. W. Kernohan exhibited films of general interest, including one taken at a recent Territorial camp. This was a particularly good meeting, 32 members attending.

## WAIRARAPA.

**Carterton.**—Talk by Mr. M. C. Armstrong, Government Veterinarian, on "Calving Troubles." At the previous meeting a discussion took place on the Y.F.C. Experimental Scheme, and a lantern lecture on "Wool" was given by Mr. J. E. Duncan, Department of Agriculture.

## MANAWATU.

**Apiti.**—Discussion on Y.F.C. Experimental Scheme. Lecture by Mr. R. D. N. Hill, Inspector of Stock, on "Common Ailments of Stock."

**Bunnythorpe.**—Lecture by Dr. Geates, Massey College, on "The Planning and Planting of Shelter Trees"; the lecture was illustrated by pictures.

**Kimbolton-Kiwitea.**—Address by Mr. F. H. Billing on "Insurance."

**Oroua Downs.**—Delegates elected to Feilding stock judging committee. Address on "The Forming of Pig Clubs," by Mr. L. Marsden, Supervisor, Wellington Pig Council. Results of the Anderson and Mitchell Challenge Cup contest, for field dog stock judging, J. L. Marsden and F. Shailer, equal, first.

**Rangiotu.**—Business meeting; arrangements for Patriotic Ball.

**Rongotea.**—Talks by Mr. L. H. Garrall ("Personal Adventures as a Youth in Australia and North America") and Mr. H. J. Lancaster ("Tour of Australia"). At the previous meeting, Mr. H. A. Bayley, Inspector of Stock, gave an address on "Diseases of Cows," illustrating his talk with specimens.

**Waituna.**—Discussion on Y.F.C. Experimental Scheme. Address by Mr. J. Williamson on his tour of the Argentine.

## WANGANUI.

**Bulls.**—Business meeting. Discussion on district essay competition—ten members to compete, seven senior and three junior. Copies of bulletin, "Mole Drainage in New Zealand," distributed to members. Account for goods for overseas parcels passed for payment. C. B. Anderson reported on the recent district committee meeting, and S. G. Avery reported on the annual general meeting of the Federation. Junior and senior teams to compete with the Taihape Club in the final of the district debate. Secretary instructed to write a letter of sympathy to parents of Private A. Harte, a club members overseas, now reported missing. Discussion on Y.F.C. Experimental Scheme; eight members agreed to undertake 12 trials in all. At a meeting of the club committee, held previously, it was decided to act upon the various recommendations of the annual general meeting of the Federation, such as the encouragement of junior classes in all activities, the formation of a Women's Auxiliary, and the appointment of road organisers.

**Mangaweka.**—Dance to be held in aid of Home Guard. Lantern lecture by Mr. E. P. Neilsen, Consulting Officer, N.Z. Dairy Board, on "Animal Feeding and Genetics."

## NORTH TARANAKI.

**Inglewood.**—Dance to be held in conjunction with Junior Division W.D.F.U. Address on "Bull Survey Work" by Mr. F. L. Knowles, Consulting Officer, N.Z. Dairy Board.

**Mangorei.**—Mr. F. L. Knowles, Consulting Officer, N.Z. Dairy Board, addressed the meeting on "The Selection of the Herd Sire."

## SOUTHERN HAWKE'S BAY.

**Dannevirke.**—K. Bateman, club secretary, granted leave of absence for the duration of the war; R. F. Galyer appointed secretary in Mr. Bateman's absence. Arrangements made to inspect the club's centennial tree plantation. One new member elected. Short talks by Mr. S. K. Carswell on "The Treatment of Fractures in Dogs," "The Selection of Seed Potatoes," and "Choosing Good Grass Seed." Address by Mr. Combe, Central Hawke's Bay Power Board, on "The Use of the Ultra Violet Ray"; the speaker's demonstrations on a varied selection of materials opened up wide possibilities.

## CENTRAL HAWKE'S BAY.

**Onga Onga.**—The meeting took the form of a social evening in which members and friends took part. Supper was served by members of the club.

## NORTHERN HAWKE'S BAY.

**Matapiro.**—Talk by Mr. R. P. Hill, Department of Agriculture, on "Various Topics of Farming Interest." At the previous meeting two debates were held, as follows:—(1) "That Motor Vehicles be Restricted to 40 Miles per Hour"; speakers, H. Pearce, I. Lancaster, W. Farquhar (affirmative), I. Dillon, G. Clarke, G. Algie (negative). (2) "That Picture Theatres be Closed on Saturday Afternoons"; speakers, J. Farquhar, T. Lamont, S. Lothian (affirmative), J. O'Neill, A. Whyte (negative).

**Meeanee.**—Business meeting. Secretary directed to write to Mr. J. D. Laing, Government Veterinarian, expressing appreciation of his past services to the club and to wish him success in his new appointment. Dance to be held. Three new members elected.

## POVERTY BAY.

**Gisborne.**—Discussion on shearing competition at forthcoming A. and P. Show. Two new members elected. Talk by Mr. T. G. Johns on "Hereditary in Breeding."

**Te Karaka.**—Social evening.

## TE KUITI.

**Mokauiti.**—Business meeting; W. Tatham elected as hon. secretary to replace J. W. Law, who is going into camp. At the previous meeting a debate was held on "Dairy Farming v. Sheep Farming."

## WESTERN BAY OF PLENTY.

**Kati Kati.**—Business meeting. Report on annual ball; profits amounted to £14-10-0.

**Te Puke.**—Impromptu speech contest, in which 11 members took part; one minute allowed each contestant to study subject, two minutes for speech. The winner, K. Petch, was presented with a book.

**Te Puna.**—Officers elected at annual meeting: Advisory President, Mr. S. G. Williams; chairman, K. l'Anso; secretary, D. Foster; treasurer F. Roberts.

## EASTERN BAY OF PLENTY.

**Edgecumbe.**—Business meeting. J. Sumner elected as acting chairman, while G. Robins is in Territorial Camp. Farewell presentation to be made to Mr. C. R. Taylor, district secretary. The secretary was instructed to enclose a letter of appreciation.

**Waimana.**—Presentation to be made to the district secretary, Mr. C. R. Taylor, who is being transferred to the Rotorua district. Impromptu speeches were given by members as an aid to the selection of a debating team.

## WAIKATO.

**Kakepuku.**—Inter-club debate with Te Awamutu Y.F.C.; subject, "That the Modern World is Degenerative." The affirmative was taken by the Kakepuku team. Speakers, P. Scriven, J. Donaldson, R. Madeno (Te Awamutu), W. Neill, P. Ray, B. McVerry (Kakepuku). Rev. Martin Sullivan acted as adjudicator, and gave the decision to the Te Awamutu team (negative), 243 points to 230. Members of the general public were present by invitation.

**Te Awamutu.**—Report on club dance. Football match with Kakepuku Club to be held. School children to be invited to attend field days and suitable lectures. Address by Mr. A. J. Ward, Technical Officer, N.Z. Dairy Board, on "Animal Genetics"; the speaker dealt with in-breeding, line-breeding, cross-breeding, mating, disease, etc., and answered many questions.

## AUCKLAND.

**Harrisville.**—Arrangements for card party. Presentation to G. Hewitt, a member recently married. Talks by club members as follows:—"Stripping or Non-stripping" (H. W. Barnaby), "Weaning of Heifer Calves" (N. G. Barrett), "Economy in Wartime" (A. Martich), "Dairy and Beef Type" (G. A. Barrett), "The Wairarapa Plains" (E. D. Williams).

**Hunua.**—Impromptu debate, "Electric Fencing v. Ordinary Fencing." Speakers, D. Sleeth, J. Seaton, W. Chamberlain, K. Pollock (electric fencing); W. A. Wellacott, J. Redman, R. Pilkington, I. Bradstreet (ordinary fencing). The supporters of ordinary fencing gained the decision.

**Mauku.**—Dance to be held in aid of Red Cross funds. General discussion among members on "Stock Diseases."

## WARKWORTH.

**Kaukapakapa.**—Mr. R. Taylor, Consulting Officer, N.Z. Dairy Board, addressed the meeting on "The Work of the Herd Improvement Association." A field day was held on the Y.F.C. Centennial Memorial Reserve; approximately 200 trees of various native species and 100 eucalypts (comprising nine different varieties) were planted. There was an attendance of 45, including a number of local farmers.

## WHANGAREI.

**Matarau.**—Officers elected at annual meeting: Advisory president, Mr. H. H. Wilsher; chairman, W. A. Rushworth; secretary, I. D. Bodle.

# Health Notes for the Farm

## Posture in the Young is Important

Contributed by the
DEPARTMENT OF HEALTH.

IT is generally recognised that correct posture adds grace and beauty. It is quite true that the correction of improper postures promotes poise and makes for beauty, but it is equally true that an erect carriage has a marked effect upon the general health. A slouching, stooping posture, in addition to being very unsightly, tends to cramp the internal organs, and interferes with their proper functions.

To walk with head up, chest high, and the toes straight forward, and to do so with ease, is by no means an unimportant accomplishment, and such a posture is a distinct health asset.

Good posture, however, is much more than merely "standing straight"; it is the use of all parts of the body with proper balance, with ease and grace. This proper use of the body is called good body mechanics.

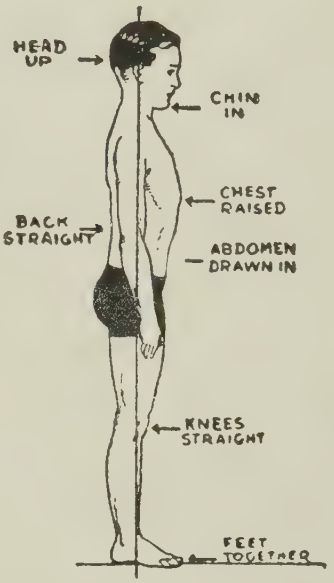
Posture is the way the bony framework is held while sitting, standing, or lying. The organs of the body are arranged within this bony framework; therefore, if the posture is not correct these organs will sag or be squeezed out of their right positions, and will not do their work properly as pointed out above.

Young bones are like branches of a tree, being more easily bent than older ones. Therefore it is obvious that the body to be perfect must be trained while it is young and flexible.

Proper use of the feet is necessary if a child's body is to be held in good balance. When the feet are used correctly the child's weight is on the balls and outer sides of the feet, the toes point straight forward, and the inner sides of the feet are parallel with each other. Wearing the proper kind of shoes, keeping the feet parallel and pointing forward will help to throw the weight correctly, but how well the feet do their work depends largely on the strength of certain leg muscles that hold the feet in proper position. If the muscles are strengthened as the child learns to stand and walk and as he becomes more and more active, they will help to keep the whole body in good balance.

A child should be taught that walking exercises the body and muscles. It is very important that all children play games and not merely watch them. They give a great variety of action and also mean fun and companionship.

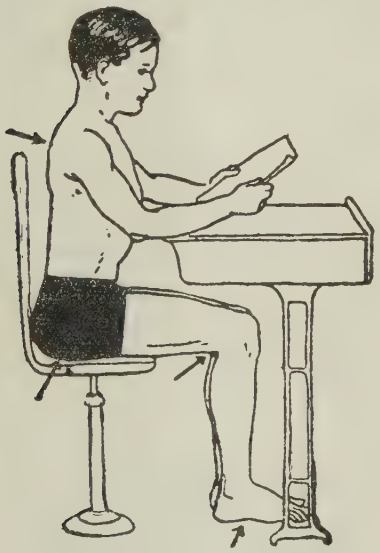
Then many kinds of useful work are also very good forms of exercise, such as gardening, for instance. Swimming is also excellent exercise, and every boy and girl should be able to swim. Daily physical drill in the open air, if possible, and folk-dancing are of importance for the development of




### How to Stand Correctly.

**In the Right Standing Position—**

**(1) The chin is drawn in and backward.**
**(2) The head is up.**
**(3) The chest is raised; the breast bone is the point farthest forward, and the rib spaces are widened.**
**(4) The lower abdomen is flat and drawn in.**
**(5) The knees are straight and without strain.**
**(6) The feet are together and pointed straight forward.**
**(7) The back is almost straight.**
**(8) The line dropped from the ear crosses the middle of the top of the shoulder, touches the middle of the hip, passes through the knees, and touches the floor opposite the most prominent part of the outer side of the foot.**



### How to Sit Correctly.

**In Sitting Correctly—**

**(1) The upper part of the body is erect or leaned slightly forward.**
**(2) The body is bent only at the hips and knees.**
**(3) The head, neck, and trunk are kept in one straight line.**
**(4) The lower part of the back and the end of the spine rest squarely against the lower part of the back of the seat.**
**(5) The feet rest squarely on the floor. If the chair is too high, a small box should be provided as a foot rest.**

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good posture in boys and girls. A picnic in the country or a day spent playing about on the seashore are what a young child wants. All children are not built alike, and what suits one does not necessarily suit another.

We all admire a man or woman who stands straight and moves gracefully, and the foundation for such is laid by careful training and supervision of the young. "Whatever may be the future of the child," writes Dr. John Gibbens, "he should have every chance while he is yet young to develop his small body to the uttermost, to appreciate the fun of movement and the delight of running wild; for a healthy body is a priceless possession."

## Chick-Sexing Examination

FOUR candidates took part in a chick-sexing examination at the Poultry Station, Wallaceville, on August 18. One candidate was awarded a first-class certificate of merit, Mr. A. B. Pirie, 112 St. Andrew's Street, Invercargill, who sexed 200 chicks in 30 minutes with 100 per cent. accuracy.

It is hoped that the temporary setback sustained by the unsuccessful candidates will not unduly dampen their enthusiasm, and that Mr. R. Fairey, Greenmeadows, Hawke's Bay, Mr. J. G. Fletcher, Palmerstan North, and Mr. R. G. Bell, Christchurch, will take an early opportunity of presenting themselves for further examination.

It is expected that the next chick-sexing examination will be held early in November.

### "PIPPA'S COOKERY BOOK."

"PIPPA'S Cookery Book" has ever so many new and delicious recipes in it—have you tried any of them? But perhaps you haven't had time yet, for "Pippa's Cookery Book" has only just been published. All profits from its sale are to be devoted to the work of the Leper Nursing Sisters.

—*MARY.*

**LEND** to Defend the Right to be FREE!

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# THE Good Neighbour

BY MARY

## From Me To You

*HOW many of you have discovered the joy that lies in dreaming? Remember the old saying which tells us that the best things in life are free? Well, here is one of them, right at your fingertips, which will open magic kingdoms to you and for you.*

*How precious dreams can be! We all have our dreams, we all have need of our dreams—they are as much part of our lives as our bread and butter. What does it matter if our dreams do not materialise? We who have known the deep joy our dreams bring us will all agree that we lose nothing by having had our dreams; as with pain and sorrowing, we are left richer in spirit because of them.*

*Let us read what J. Abraham wrote about dreams. He said, "Dreams are very precious things to the world-weary. All poetry is of the stuff dreams are made. Men write poetry out of the depths of their sensations; women read it in anticipation of the joys they hope to experience. And it is all just dreams —dreams of the colour of illimitable blue, steeped in the memory of forgotten amethysts. Dreams make the rugged places of the world appear as gardens of roses and honeysuckles; dreams are the anodyne of life."*

*We tread on our dreams wherever we go—they are so many, and are so thick about us, we cannot help it. But our dreams do not mind—they are part of us, and we cannot hurt them.*

*Dreams DO come true. I have a dream which came true in the most unexpected way, but it didn't come true for a very long time after I had ceased to wish and long for it. And I know now that in the realisation of that dream I lost many other things by the wayside, yet the one dream fulfilled compensates for a thousand which came to naught.*

*Hold fast to your dreams—never let them be taken from you. Go out into the open air, for just a little while each day or night, and dream. Time spent in dreaming is never lost, and perhaps to-day, more than ever, we need our dreams as a flower needs the sun.*

Mary

## Mary's "At Home"

I THINK I can claim to be considered, to some extent at least, to be numbered among the pioneers. My grandparents came out with the early settlers about 1860, my father "went back," and my husband also. My elder children were taught by correspondence, and my younger children started that way too. Now my boys are in camp (Air Force), my elder daughter is in an office, and the younger one is at home, going to school by bus. We are carrying on the farm under difficult conditions, as labour is scarce and we are getting old, in the hope that one at least of the boys will be back to keep it on. There are so many in the same position, or worse, that we can't complain, and at least the war hasn't reached here yet.—**Elizabeth, Gisborne.**

BIDDI-JAN, if you believe that things are mapped out for us when we are born, are you not throwing over a democratic way of living, and accepting a dictatorship? Might I explain it this way? If Hitler wins this war, and we virtually become slaves, can you still think this was fore-ordained, and that we must bow our heads before the yoke? I think not. God has given us freewill, translated today in the true meaning of the word democracy. And in that freewill we have our choice between Good and Evil. Many roads there are to take, many lanes, and aye, many a blind alley for us to go down along the Path of Life. But the choice is ours, and ours alone. We have eyes to see with; ears to hear with, and a reasoning mind to guide us. Alas, too often we "gang our own gait." And a pitying Christ looks on over a troubled world today. If it were all ordained, could we not sit back now and say, "It does not matter if fire and famine or war and fever destroy us all. It was planned. And what's to be will be." Planned and perpetrated by Man certainly, but by any being outside this universe I cannot

believe. If I did I should lose faith in social order, and justice, and, supreme point, faith in myself as a helpful, intelligent unit of society.—**Bart, Otorahanga.**

AFTER dipping into your section, I felt exactly as if I'd been introduced to a new friend. And that will be something more to look forward to each month.

"The world is so full of a number of things
I am sure we should all be as happy as kings."

I am always glad to add to my goodly number of things. Thank you, Mary. I love the homely, friendly atmosphere of your pages, and am looking forward to further acquaintance.—**Lifuka, Nelson.**

THE pen-name "Unhappy Jack" should not convey to you a glum-countenanced type of individual. Jack is not that. He tries to be cheery, and helpful to others, as opportunity offers. He is a farmer—mostly sheep, on high country, where in winter the snow oft mantles hill and dale. His nearest neighbours are respectively five and two miles away. Therefore, in the wide open spaces, his thoughts meander at times in literary and poetical lines. The "Journal," being a farmer's paper, is read by sheep men, cow men, pig men, as well as the tillers of the soil. These men on the land can generally take a turn indoors to equal the average housewife. Therefore, it should not surprise you greatly to know that many of these men have a warm corner in their oft rugged hearts for Mary.—**Unhappy Jack, Gisborne.**

AT our local W.D. meeting, members are asked to give their version of what women are doing in the world today. It is amazing how many different people are mentioned, and what wonderful work is being done by some women. Among the most notable women mentioned are the Queen, various members of the Royal Family, Mrs. Roosevelt, a woman who makes all the little white pieces in our airmen's caps, and of course the wonderful women of England. Don't you think it is a very interesting idea?—**Bettina, Frankton Junction.**

TWO young boys living near us decided to give their father a Bible for a birthday present, so putting their savings together, they purchased a beautiful copy. Then came the time for consideration—what would they write inside it? They decided to look through their father's books, and see what was written in them. Next morning, when father sat down to breakfast, there was the Bible, and on opening it, he found the inscription, "To Daddy, with the author's compliments."—**Polly, Poolburn.**

JUST recently I came across this in Arthur Mee's "Talks to Boys." Speaking of good books he says: "A man is known by his books, as truly as by his looks, for a man is what his mind is, and books are makers of minds. You will find it worth while to read with a pencil at hand and mark the thoughts that strike you. It is only men who pretend to love books who are afraid to mark them." They are lovely thoughts, and you see now why I value your messages—when I read them there are plenty of pencil marks. I love my books, and in my bookshelves there are old and new favourites.—**Peggy, Pleasant Point.**

YOU touched a specially appreciative spot when you spoke of adventure in arranging flowers. But I take up one small challenge—I think pewter is dull in comparison with brass or copper. And you can't polish pewter. But marigolds in brass—lovely! Speaking of that subject, when I was in Timaru recently, I was taken to see St. Mary's Church. It has a most enchanting interior, but especially I noticed the arrangement of the flowers. Instead of tall vases, that carry the eye upwards, there were six shallow, graduated brass bowls with claw feet, filled with scarlet massed geraniums. Such a change! I once had to fill our church vases, at a time when flowers were very scarce. All I could get was the ornamental broom, but I cut very long, slender sprays. It is usual to have a very massed effect for that purpose, but I had to achieve the reverse, somewhat doubtfully, in my own mind. Imagine my surprised delight to see the tracery of shadow, delicate as lace, thrown on the cream hangings by the two candles.—**London Lass, Wellington.**

A WELL-KNOWN bishop set out one night to attend a children's party. "Don't announce me," he said to the servant. Leaving his hat and coat downstairs, he quietly opened the drawing-room door, where the buzz of voices announced the presence of company. Dropping on hands and knees he entered, making queer noises like the neighing of a horse. Aware of a sudden silence he looked up, and found the guests assembled for a dinner party—the children's party was next door!—**Puss, Oturehua.**

WOULD Biddi-Jan mind me commenting on her theory that everything is mapped out for us from birth? The psychologists, you know, wouldn't agree with you, Biddi-Jan. They say, "Man is a choosing animal," and he can intervene purposely in the course of events with intelligent foresight of ends. Progress comes like this, they say; we think, then we act, but our action and its results cause us to modify our succeeding thoughts, which in turn cause us to modify our next fact, and so on to the end. And, of course, in our thinking we are (or should be) influenced by the future as well as the past. And, of course, too, our lives are so immersed in the lives of others that we receive both the good and the bad consequences of their respective actions as well.

I don't know whether accidents never happen, but at any rate some lessons are out of all proportion. Would you say a child was meant to be born in the slums, Biddi-Jan? For if the rule holds good for one, shouldn't it hold good for all? Are not bad conditions the result of our individual and collective will power to do better? I like to think rather that very little in this world is meant to be as it is, and the obstacle in our path of progress is our lack of that energy of desire. Now don't all fall upon me in vehement disagreement. Of course I realise that we are handed out certain materials and have to make the best pattern we can out of these. But what I'm trying to say is that the material is life, and the pattern has infinite possibilities. So firmly I believe "Man is a choosing animal." What do you all think?—**Kaleidoscope, Four Peaks.**

DELAYS *are* DANGEROUS
*EFFECT That POLICY*
with the
GOVERNMENT LIFE
TO-DAY

# It's a Topsy-turvey World We Live In

IT'S a topsy-turvy world we live in today—who doesn't know it? Every day we find we have to readjust ourselves to some fresh set of circumstances, every day we find our sense of values altering. It's difficult sometimes to keep looking on the bright side, especially when the days seem a succession of small worries and upsets. But don't let the topsy-turvy world upset you. Worry never did any one any good, and even if your world does seem upside down today, then tomorrow it must straighten up again for you. It is the law of averages—it never fails.

Where are you going to begin to keep level? All over the world women are doing jobs they have never tackled before, and are doing them in a splendid fashion. Here in our own country our women are helping the men on the land, helping with all their heart and soul, in an effort to win the war. And while they are helping, they are often bearing heavy burdens of worry and anxiety—but it's a strain, and unless you are more careful of yourself than you usually are, then the strain will tell. Very soon you will find circles under your eyes, feel yourself losing your dash, feel yourself growing old—too soon.

There are many ways in which to combat the evil. First of all I would recommend to you something new to wear. Not necessarily a whole new outfit—they are luxuries these days. But a new hat, perhaps with a gay feather, and a scarf to match, will brighten your old costume, and brighten you, too. Despite extra work, you must keep yourself looking smart and fresh. Try a new flower on your frock, a new belt, or a new blouse—anything, so long as it is fresh and new.

What about your cosmetics? Have a change of face powder, or face cream—a new perfume will act as a tonic in itself. Go down to the hairdresser and tell her you want your hair set in some style which you haven't ever tried before. Hair styles can work miracles on tired spirits.

And, whatever else you do, or don't do, please don't neglect your leisure periods. They are more important to you now than ever before—extra work means extra strain on your nervous system, and as compensation you must give yourself more rest. But resting does not necessarily mean idleness—you can knit, or read, or perhap just enjoy the luxury of listening to the wireless for a little while now and then between jobs.

But do be careful of yourself. Everything and everyone seems upside down these days—do you want to stay upside down for ever? Because you will, if you are not very careful.

### MIRACLE

**It rained last night,**
**And when the people woke they said:**
**"No joy in getting up today,**
**We'd rather stay in bed."**
**They did not see, those foolish folk,**
**The beauty that I found,**
**They did not see the sparkling drops**
**That silvered all the ground.**
**And when at last the sun came out**
**The foolish ones saw not**
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**That sparkled, silver shot.**

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# Our Competition

## "WHAT IS YOUR SECRET DESIRE?"

SO many secret desires have come in to me, tumbling out of my mail every day, that I marvel at so many secret desires being in existence. First prize to "Lifuka," Motueka—her desire could be translated into so many other things—possibly pencils for me, instead of tools, and needles and cotton for you, mother. Second prize to "Gran," Meeanee, and highly commended "London Lass," Wellington (who seems to have more than her fair share of secret desires!) and "Ajax," Oxford.

Secret desires? Well, they may have been secret once, but they're secret no more now.

### *First Prize*

WHAT is my secret desire? Well, it may sound trivial to you, but, how I would like to possess a complete set of really good garden tools! I am a garden enthusiast, and often snatch a few minutes to work in the garden. Then this sort of thing happens. I particularly want to hoe something and there's no hoe to be found. Either they're all in use, or else they've been left where last used, about three paddocks away. When I do find one, it is usually too heavy or blunt—just the old one no one else wants. It's the same with all the tools. By the time I've located the one I want, both the precious minutes I had to spare and my enthusiasm have flown. So putting aside all the other things I'd like to mention as secret desires, I'll say "Tools." (Of course, I'd need a shed, plus padlock, to retain possession of them, so we'll include them as well!)—**Lifuka, Motueka.**

### *Second Prize*

WHEN I was a child my mother took me, along with my sisters, almost every Sunday afternoon to visit my Grandma, and we had tea with her. To us it was the greatest treat—lovely hot buttered toast and fruit tart with clotted cream. Always I had a secret desire that one day I would take my children to tea with their grandma. Well, after years I did marry, but alas, I was at the other end of New Zealand, and could not take my children to visit my home, and my mother died soon after. But still the secret desire remains, and I look forward to the day when my grandchildren will come to tea with me, and I'll give them hot toast and fruit tart and clotted cream—all the things that will help them to remember tea with grandma, and perhaps they too will foster a secret desire like mine.—**Gran, Meeanee.**

### *Highly Commended*

TO probe one's mind for the revealing of a secret desire is like making the acquaintance of oneself entirely afresh. And an interesting experience it has proved! For I discovered not one but a flock of secret desires that have been my lifelong companions. I think the oldest and perhaps the dearest wish was for curly hair. I am far from discontented with my own coppery-brown locks, but, oh, how I longed for springy curls, such as my mother has. I have always associated places intimately with people—book-people as well as others. Consequently, I longed to visit Japan, for the sake of "The Lady of the Decoration." Her life in the kindergarten was as real as my own. I dreamed, too, of walking up to Luther Burbank in his Californian garden, and asking him to show me his plant-miracles. And of shaking hands and taking tea with that kindly old gentleman, Lord Frederick Hamilton. But surely, the strongest longing of all is to tread the streets of London, to pick primroses in Devon lanes, to see the Kentish cherry orchards in spring. That longing is always with me, and it sweetens life, whether it will be realised or not. Certainly it provides one of the essentials of happiness—"Something to work for, something to hope for, something to love."—**London Lass, Wellington.**

**You're mistaken! It's not our good neighbour "Lifuka" who has realised her secret desire! It's Fay Holden the Metro-Goldwyn-Mayer actress, out in her garden.**

I HAVE travelled a little, and I have a dear little home and a wee girl whom I adore, so that when I have so many of the things which women hold


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dear, it seems an impertinence to cherish a secret desire. Yet deep down there is one, and I have been aware of it for many years. It came into being because I visited the home of a friend, and found there her mother, a woman possessed of all the qualities which seemed most desirable. She was unequalled as a hostess, her poise and charm were to be envied, she knew what to say, and when to say it, and she combined a natural gaiety with strong, unerring good sense, tact, and womanly discretion. I was at the impressionable age, and I was impressed by her good looks, her beautiful white hair, and her manners. The process of growing up which previously had seemed so distasteful to me took a new turn. I began to wish that I too might learn this great secret so that old age would come to me "lovely as a Lapland night." And now you know that my secret desire is to accept life as it comes, and make the best of it, so that I may grow old gracefully.—**Ajax, Oxford.**

I WAS pondering on your question, and how to write that my simple secret desire was that my husband and I should be granted good health, and the opportunity to continue our journey together, and celebrate our golden wedding anniversary. Then I chanced on a quotation from James A. Garfield which seemed so well to explain what I meant, although of course it does not mention good health or golden wedding anniversaries. "You and I are now nearly in middle age, and have not yet become soured and shrivelled by the wear and tear of life. Let us pray to be delivered from that condition where life and Nature have no fresh, sweet sensations for us."—**Laurel, Feilding.**

A GIPSY woman I'd like to be, free and wild, with a caravan red and donkey grey. Nothing to do the whole day long but travel the country roads, and on Nature's beauty feast. I'd like to beg my bread, and in return tell fortunes fair and true, then on my way I'd go. I would gladly exchange my pomp and wealth to travel along with my caravan red and my donkey grey.—**Emily, Havelock North.**

THE big and one and only desire I have is to be free of the cowshed, and nothing to do but my housewifely duties, and my maternal joys. For many years I have taken a man's place on the farm, and not without grudge. The work has been there to do, and the maxims taught me in my youth hold fast: "Do that which is next your hand." However, nothing is done without cost, and I have not been able to do farm work and have babies, which I would adore to do. My only son is an ever-present delight to me. but how I yearn for him to have brothers and sisters. The struggle to gain land has been hard, and often one wonders if the game is worth the candle, and yet there is ever that little

## New Year Resolutions.

**"ALREADY?" I can hear you ask. Yes, it won't be long now before we are into 1942—two more months. We all make New Year resolutions, even if it is only for the fun of seeing how long they last before we break them.**

"WHAT ARE YOUR NEW YEAR RESOLUTIONS FOR 1942?"

**Yours may win one of the prizes—10/- for first, 5/- for second. Send your resolutions to me before November 20 please.**

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004,
Wellington.

**Closing date: November 20, 1941.**

gleam of light beckoning us onwards. Sometimes I think we will change our vocation, and then over-rides it the thought that nowhere else can children grow so well and truly blessed as on the land. I want lots of them!—**Mother Eve, Waikato.**

LIFE is rather a queer affair, isn't it? Such a mix-up of poverty or wealth; a jumble of emotions, desires, and longings, hopes and fears. We never know what tomorrow will bring forth—what desires will be miraculously answered, or what desires forever withheld. But there is one gift I believe is unsurpassed in value, whether we be rich or poor, famous or obscure. Because I am sure that none of the things life can bestow can be truly enjoyed without sharing, and that hardships and sorrow can be doubly hard without a comrade to understand, my desire is for a perfect companion, perfect at least in my eyes. For no matter what else life granted me, or took away in the capricity of fate, to have someone by me who understood my outlook, because it too was their own, would be to me of value above rubies. Just a perfect understanding of each other that would make life a tranquil serene thing at heart, amidst all other complexities of ease or hardship. So I cling hopefully and eagerly to the old adage: "Wish wisely and wish well, for what you really wish for will surely come to pass."—**Tiggety Boo, Kati Kati.**

## Helpful Hannah Says . . .

When you are knitting with a dark-coloured wool, spread a large white handkerchief over your knees. This is a great help to the eyes, especially if you are working in an artificial light.

* * *

If you heat a little too much hot water in your kettle, don't let it get cold on you again. Pour it into the thermos flask, and it will keep hot for hours.

* * *

When washing up eggy knives, forks, or plates, soak them for a little while in cold water, and they will then wash quite easily.

* * *

Do you darn your daughter's black stockings at night? Then switch on your electric torch, and use it as a darner. It's a surprising help in darning.

* * *

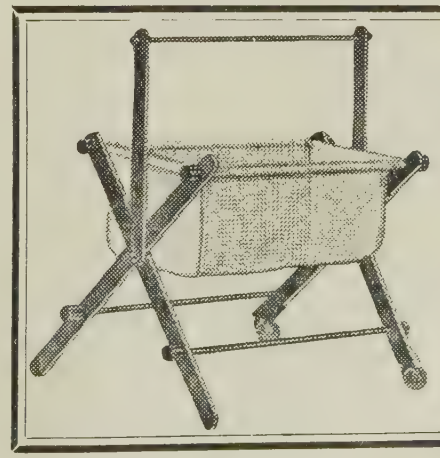
A teaspoonful of sugar added to the final rinsing water when you are washing a voile frock will restore its original crispness.

* * *

Before greasing your cake tins or trays, warm them in the oven for a few minutes. The grease then spreads evenly, and prevents your cake from sticking to the tin.

* * *

Pour a little water into your ash-trays before using them. This prevents the ash from smoking, and also from blowing round the room if the day is windy.

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# . . . How Does Your Garden Grow?

EVERY woman loves a garden, every woman is a gardener at heart. Which is only natural, for colour, brightness and beauty in Nature are outstanding. The profusion and variety of her creations every season are impressive: in the home garden winter months have been bright and fragrant with violets and daffodils, camellias and wattle, poppies from Iceland, and anemones from Syria. Now the flowering trees, shrubs, and herbaceous perennial plants form a floral calendar of cheerful anticipation—November provides a special opportunity of ringing a change, and supplementing display by making use of some of the many fine flowering annuals.

The hardy and half-hardy annuals afford an excellent opportunity of introducing variety in the garden by changing the colour scheme, but three points must be remembered: the preparation of the land, the selection and arrangement of the plants, and planting and maintenance. Plants of this class require a rich soil to enable them to show to best advantage. A profusion of blossom makes a heavy demand on constitution, so that with few exceptions a generous supply of humus is required. Where the soil is infested with bad weeds, or is dusty and exhausted by long cropping, it is best removed to a depth of 12 to 18 inches, and replaced with a rich sweet loam. Mix a third part of good decayed farm manure with the lower 6 to 9 inches, and work into the top soil

**Rustle of spring, as gay as its tropical bird print, is this informal cotton dress worn by Rosemary Lane, of Columbia studios. Its breezy, fly-away effect marks it for distinction in any summer evening gathering.**

an ounce or two of superphosphate, and 4 oz. of bonedust to the square yard. Under good management such a preparation will last for three or four seasons, if the dressing of phosphates is added to the top soil each year as required.

In the selection and arrangement of your plants, your choice is very wide—in fact, almost unlimited. It includes the long list of hardy annuals contained in our seed catalogues, and in addition many perennials, such as dahlias, chrysanthemums, geraniums, and even gladiolus that are commonly used as annuals. In a choice so wide, you can select plants suited to almost any conditions. If your garden is exposed to strong winds, try antirrhinums, calendulas, geraniums, and pelargoniums—these are but a few of the many plants which tolerate or prefer such conditions. Where it is dry you will find, too, that marguerite, carnations, dianthus, eschscholtzias, petunias, and portulacca will flourish.

Well-grown plants are essential to success. Plants that have been forced in their growth are big, soft, of a rich colour, and poorly rooted. Stale plants are often drawn, hard in flower, and poorly coloured. Good plants are of moderate size, with abundant roots. Plants raised under glass should be gradually hardened off before being placed outside. During the hardening process, plants should be kept rather dry, but a day or so before planting out see that the soil is in good, moist condition that will facilitate successful removal. Set the plants out with a good trowel, firmly and rather deep, 8 to 12 inches apart, and up to 3 or 4 feet apart in the case of dahlias and chrysanthemums. It is better to avoid the taller varieties, which require considerable attention in staking and tying. Patches and strips to be sown with seeds should be attended to, sowing in drills rather than broadcasting, and later water from a can with a fine rose. When the seeds are up, and the plants begin to make new growth—about 10 or 14 days later—lightly hoe the newly-ploughed beds and borders during fine weather to destroy seedling weeds which will also have grown up overnight. When dealt with in this way weeds will cause you no trouble, and the crop comes away rapidly.

There's the sun again! Doesn't the earth smell sweet after the rain? The ground is moist, and just ready for you to give it a little attention—I know there are a hundred and one jobs to be done indoors, but still I ask you, "How does your garden grow?" And I know where I'll find you in five minutes!

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## "... Only Skin Deep"

### *The Value of Rest*

IT is strange how often, and how easily, we overlook the value of that most important factor in good health—rest. Some of us are inclined to scoff at those who have their daily afternoon nap, but, believe me, it is these scoffers who will one day be the stoutest adherents to their rest hour. Nothing is more vital to a busy mother, who has perhaps started her day earlier than the family and has busied herself all the morning in a thousand and one different ways, than her time of rest, for it is only by having, and insisting upon, her rest that she is fresh and ready to greet the family on their homecoming.

Half an hour spent in the early part of the afternoon in complete quiet is not half an hour wasted: it is thirty minutes well spent, for during that time tired nerves have had a chance to freshen up, and tired spirits have revived. Happy indeed is the home that possesses an old but comfy sofa

in the living-room where mother can curl up for a little while whenever the opportunity offers. But it is not enough to wait until the opportunity offers. Every busy mother who has found the beneficial effect that a rest-hour has on her nerves and spirits will tell you that the opportunity must be **made**, probably every day for quite a while, until it becomes a habit.

But perhaps you are one of those unfortunate people who are unable to sleep at will? Insomnia is perhaps the worst of all evils, for it is only by great will-power that it can be overcome. If you are inclined to suffer from sleeplessness, try having a hot bath every night just before you retire, rub yourself briskly after it, and go straight to bed, with a hot drink. Reading may help to induce

### A LITTLE BIRD . . .

**A little bird outside today**
**Was singing, singing, singing . . .**
**A little bird in the endless blue,**
**Was singing, singing the whole day through,**
**And deep in my heart a gladness grew,**
**It budded, and burst, a flower in dew . . .**
**For a little bird outside today**
**Was singing, singing, singing. . . .**

sleep, particularly if the book is rather tedious and heavy. But you've tried counting sheep, and have reached the nine hundred and ninety-ninth and are still awake? Well, get out of bed, but be careful to cover it up so that it keeps warm and cosy for you, and walk round the house for a few minutes so that you get quite cold. The welcoming warmth of your bed will probably send you straight off into a dreamless slumber.

Rest! It is only a little word, but it is so important to one's health and physical well-being that I am sure you will agree with me that half-an-hour a day spent in resting is worth all the bottles of tonic on the market. So try it out today.

# How Do You Index Your Recipes?

EVERY housewife has her collection of recipes—recipes that have been gathered over the years, from friends, and culled from newspapers and magazines. Most of us have our pet recipe books, wherein we have copied these treasured recipes, but after a while, with the additions that are always going on, even the most methodical person finds that the book has somehow outgrown itself in some sections, while other places are quite empty.

I'll tell you what I do—you try it, and I'll be more than surprised if you aren't delighted with the result. Next time you are in town, go to a commercial stationer and buy a small tickler box with an index and ledger cards. If you know anything about bookkeeping, you will know exactly what I mean, but if you don't, then just ask your stationer, and you will soon be enlightened. You will find the index cards are labelled with letters of the alphabet—that's no good to you. Turn your index cards round, so that you have the blank back on which to write. You will know best how to label them—sort them into sections such as cakes, biscuits, scones, sweets, savouries, soups, meats, jams, sauces, pickles, etc.

The cards you buy will have ledger rulings, but if you are writing your recipes by hand you can ignore the red lines on the cards, and if you are pasting newspaper cuttings they won't worry you at all. Keep your recipes alphabetically under the various headings—you will probably find you can paste quite half a dozen recipes on each card.

This system has ever so many advantages. When you are cooking you can just take out the card you want, and prop it up before you. You will find that you always have enough room to enlarge the different sections as they grow, and it is so easy to refer to your favourite recipe when you want it in a hurry.

Be sure to get a good quantity of cards when you make your purchase—you may find it difficult later to get cards to fit if you don't start off with a good supply.

You may find the initial outlay a little greater than if you invested in a blank recipe book, but I can assure you that it is money well spent, for it is going to save you ever so much time over a period of years in searching for what you want when you want it. So off to town, and I'll be surprised if you don't sit down the minute you are inside the door again to start off your box system of recipe indexing. Try it! I can recommend it.

## While the Log Burns . . .

### "The Farmer's Wife"
*—By Anne Earncliff Brown*

SURELY a book with a name such as this will need no recommendation to my readers? The very name itself should be invitation enough. "The Farmer's Wife." Well, here is a book about the farmer's wife, and written by a farmer's wife—someone who has the practical understanding of human nature, coupled with the eyes of a poet for seeing and capturing beauty. Anne is the typical farmer's wife, and she recounts her experiences, her joys and sorrows, and her impressions just as they have occurred to her. There is beauty in farming, and Anne has found it. Just listen to her Farmyard Fugue:

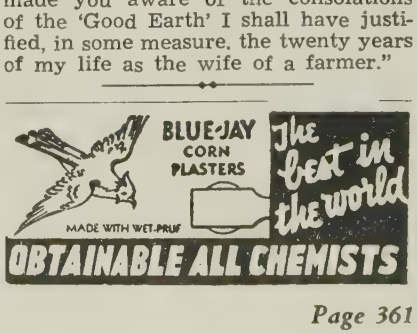
"If I were a poetess I would break into a rhapsody. The sun is making a glory of the gorse, and in the peach and plum orchard the bees, golden dusted and drowsy, zoom forth their Sunlight Sonata. Beneath the plum trees fallen blossom lies in drifts. Then a chill wind blows up from the east, and I listen, in a rain of peach bloom, to a Farmyard Fugue: the bleat of lambs, answering the deep note of milk-laden ewes; low mooing of cows, syncopated by the barking of a dog, the hoarse bass of the bull—all rising in a crescendo to a finale from the barnyard cock."

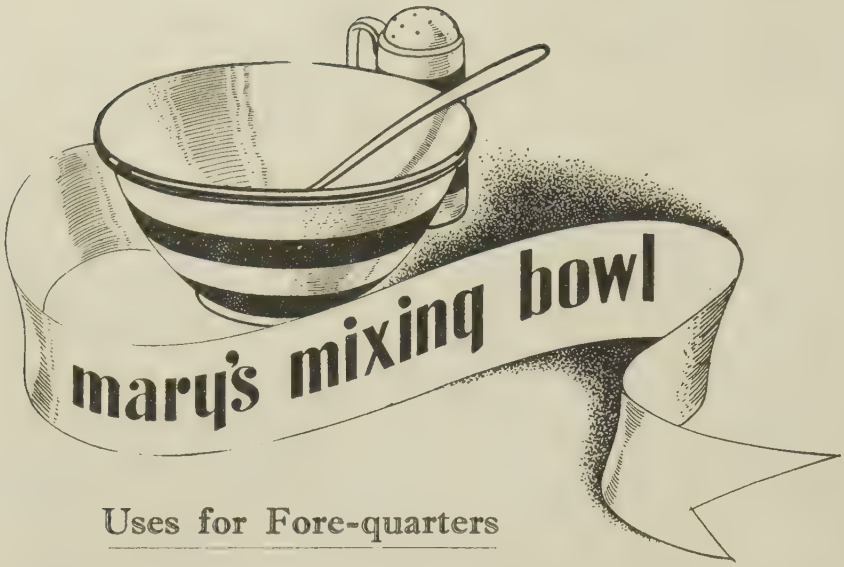
In between her "bits of beauty" and conversations with her friendly neighbour Martha (we all know a Martha like this one) the author gives us recipes to experiment with, hints to use, and lots of information about farms and farming which should appeal to every one of you.

I'm not going to tell you very much more, except to say that to own this book is a pleasure which will be everlasting, for it is one of those companionable books that can be picked up just now and then, and enjoyed for a few minutes, and then be put aside till the next opportunity arises for a little leisure. But I must not close without saying a word or two about the splendid photographic illustrations, which add greatly to the enjoyment of the book.

I will finish by quoting a little piece from the author's prefatory note—and I know it is a book you will enjoy because it was written for you by one of you.

"As long as men and women till the soil they will have joys and disappointments, exciting days, and days of gloom. I do not know how frankly I have faced all this and how successfully I have set it down, but if I have made you aware of the consolations of the 'Good Earth' I shall have justified, in some measure, the twenty years of my life as the wife of a farmer."






## Uses for Fore-quarters

The prize of 2/6 for the "Best Uses for Fore-quarters" is awarded to "Matilda," Te Puke, for the following recipes:—

**Stuffed Shoulder.**—Bone shoulder by cutting knuckle off, and work round the small end to loosen it, using a pointed knife. Work round bone until you can loosen it, and it will draw out. Fill place where bone has been with stuffing made of breadcrumbs, parsley, mixed herbs, little onion, pepper, salt, small piece of butter, and egg to bind. Roll up and sew into shape, or secure with skewers. Roast in oven as you would roast any mutton. This can be served hot with gravy, but is equally nice left till it is cold before cutting.

**Boiled Neck and Breast.**—Place in boiling water, boil for two hours, and serve with caper or parsley sauce. Carrots and white turnips are very nice boiled in same saucepan and served with mutton. Be sure and chop mutton, so the joints can be severed when serving.

**Irish Stew.**—Joint breast of mutton, cut into chops, put in saucepan with layer of chops, layer of onions cut in slices, layer of potatoes peeled and cut in slices, and water to barely cover. Season with pepper and salt, and stew gently for two hours. About half an hour before serving, add dumplings (small) made from scone dough—a cup of flour, teaspoon baking powder, and milk to mix. Roll into small round balls.

**Haricot Stew.**—Take about 3 lb. of neck of mutton. Cut chops as for Irish Stew. Fry two or three onions, one or two carrots, one turnip (if liked) for few minutes. Then fry chops for few minutes also. Strain fat off. Place meat and vegetables in saucepan, add pepper and salt to taste, also water to barely cover. Stew very gently for two hours with the cut-up vegetables, skim off any remaining fat, thicken and serve hot.

**Chops.**—The chops may be cooked as loin chops are, either fried, grilled, or baked.

**Mutton Broth.**—Save water the mutton was boiled in, add pearl barley, vegetables (carrots, onion, turnip, etc.), add pepper and salt to taste. Cook until barley is done, and serve hot. Milk may be added, and chopped parsley added last is an improvement.

The neck and breast may also be curried and served with boiled rice. The shoulder may be roasted as it is, and the breast may be roasted and served with mint sauce.

The fore-quarter of mutton is also very nice if pickled. Make a brine of salt and water, adding a little sugar and very little saltpetre—2 lb. coarse salt, ½ lb. sugar, 1 dessertspoon saltpetre, and about 1 gallon boiling water. This should float an egg in it, to be salt enough. Place meat in and leave for several days, and then boil as you would corned beef.

—"Matilda," Te Puke.

Divide it first of all—neck, ribs, shoulder.

**Neck.**—Cut into chops, brown in pan, and then, after adding seasonable vegetables, stew gently for about three hours. Add plain dumplings (1 cup flour, 1 teaspoon baking powder, and a little salt mixed with cold water) ½ hour before serving.

**Ribs.**—Chop where required for carving. Keep back about four cutlets for frying. Bake the rest with pumpkin, potatoes, etc. Use the half next the backbone hot, and keep the rest for next day to use cold, with salad or pickles.

**Shoulder.**—Cut in half, and boil shank end with vegetables. Serve with parsley or onion sauce. Add barley or other thickening to the water for broth.

Remove the bones from the other half, stuff with breadcrumbs and seasoning, binding it with an egg, and bake or braize. Nice hot or cold; or bake without boning or stuffing and serve with bread sauce.

—"Elizabeth," Gisborne.

There are plenty of ways to vary mutton if a little work is not a nuisance to the cook.

(1) Neck makes Irish stew or haricot mutton, or soup as desired.

(2) The actual shoulder roast, and have hot or cold, with vegetables or salads.

(3) Chops can be fried, or boil the whole as one piece (no flap on F.Q.) and when tender (don't boil to pieces) remove the bones. Put a piece on a plate and spread with a cooked stuffing; put another large piece of meat on top, and press with a weight or a plate. This is useful for lunches or lunch sandwiches.

(4) Cornish pasties can be made by dicing meat off any part of a quarter and add it to potato and onion; simmer for a few minutes, then bake between pastry.

(5) Mutton Chop Suey.—Brown pieces of the mutton in hot fat; add any vegetables available such as onion, parsnip, swedes, etc., and simmer. Thicken with flour and a little curry. Serve with boiled rice.

—R.L.V., Hamilton.

**Joint.**—Bone shoulder of muttton, stuff cavity with forcemeat or stuffing —1 cup breadcrumbs, 2 small finely minced apples, 1 minced onion, 1 teaspoon cayenne pepper, 1 teaspoon salt, 1 dessertspoon brown sugar, pinch herbs, bind with egg or milk. Sew up or roll into roast. Braise with any kind of vegetable and serve with good brown sauce. Known as Mock Duck.

**Cutlets.**—Cut off the best chops, trim nicely; dip in beaten egg, then browned breadcrumbs. Serve with brown gravy, tomato sauce, mashed potatoes, garnished with parsley.

**Remaining Neck Chops.**—Trim off any fat, place in casserole with chopped up onion, celery, carrot, and small

apple. Make gravy with 1 tablespoon flour, pinch salt, pepper, mixed with cup cold water; pour over chops; leave it in a good oven for 2 hours, stirring occasionally. Before serving add chopped parsley. Serve with mashed potatoes and boiled parsnips.

**Meat—Tasty or Tart.**—Take all meat from remaining bones, put through mincer, with small onion and apple. Add chopped carrot or skinned tomatoes. If not quite enough meat add cooked macaroni. Cook as pie, or, if liked, between two layers of Yorkshire pudding. In this case cook mixture first. Place layer of Yorkshire pudding in hot greased tray; cook till set, add filling of meat, and top with Yorkshire pudding. Cut into squares and serve piping hot.

Bones to be used with parsley, lentils and chopped vegetables—celery, carrots, parsnips—to make soup or broth. —**"First Try," Taupiri.**

Take off the shoulder, and have this last, as this piece always keeps the best. You can have this as the roast of the week. Now, take the fat neck chops and make them into an Irish stew. Boil the chops the night before; next day skim off all fat; add whole onions, then carrots cut in large rings, and lastly add whole potatoes. I usually add the potatoes after the stew has been boiling for about ½ an hour.

Now you will have all the large chops left, and unless the family is large, these will do twice, so next day you have crumbed chops. Trim, and then roll chops in egg and breadcrumbs and fry. Serve with mashed potatoes and mashed carrots.

The next day you can have curried chops, and here is my recipe:—To make the curry, cut up finely two large onions and fry in a casserole with a tablespoon of dripping until they are a golden brown. Add a tablespoon of curry powder and the same amount of flour, mix well and return to oven to brown; add more dripping if necessary. Then add slowly half a pint of boiling stock, and keep free from lumps. Next add a small carrot, cut into dice, the juice of half a lemon, a tablespoon of chutney, and salt and pepper to taste. Trim chops, fry a golden brown, add to sauce in casserole, and cook slowly in oven for one hour. Serve on a hot dish, with the curry sauce, and boiled rice. For vegetables, creamed potatoes and carrots, or swedes. With the ends that one always trims off, put into a saucepan, add water, and make stock. Next day, skim off fat, add vegetables and barley, and you have a large amount of good soup.

I always cut my joint as soon as it arrives, and put on the pieces for stock, as I find that the meat keeps better this way, more so in hot weather.—**"Biddi-Jan," Redcliffs.**

## Delicious Raspberries.

RASPBERRIES are delicious done in any way, eaten at any time. What is your favourite way with raspberries? It won't be long now before the fruit season is in full swing again.

So send your raspberry recipe to the "Mixing Bowl"—2/6 for the best one received by November 20, 1941.

### DATE CAKE.

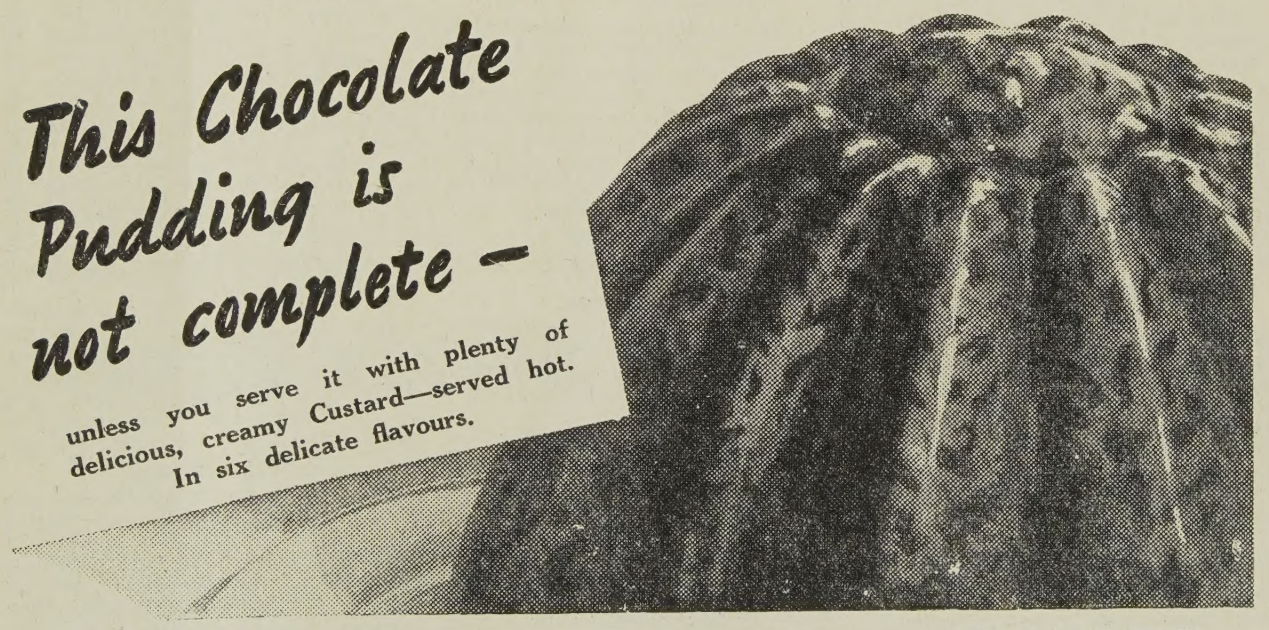
8 oz. flour, 4 oz. butter, 4 oz. sugar, 2 eggs, essence of lemon to flavour, 1 teaspoon Edmonds baking powder, 2 tablespoons milk, 4 oz. dates.

Cream butter and sugar, add essence, beat eggs well, then add eggs and flour alternately; add milk with last of egg, then the baking powder, and lastly the stoned dates. Put in a greased tin or tin lined with greased paper. Bake in a moderate oven (400 deg. F., top off, bottom low) from 45 to 60 minutes according to depth.

### PLUM LOAF.

6 oz. flour, 3 oz. butter, 1 oz. candied peel, 2 eggs, 6 oz. sultanas, 3 oz. sugar, ½ teaspoonful baking powder, little flavouring.

Clean the fruit, cut up the peel. Put the butter and sugar into a bowl, and beat with a wooden spoon until light and creamy; add the eggs and flour alternately, and beat thoroughly for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about ten minutes. Mix in the baking powder and flavouring. Lastly stir in the fruit, pour into a tin greased and lined with paper. Bake in a moderate oven for about 1 hour.

**BACON AND BANANAS.**

Skin a banana for each person, roll in flour, and fry in bacon fat. Serve on bacon slices. instead of eggs.

This is a tasty breakfast dish, and a good substitute when eggs are expensive.

**GREEN POTATOES.**

Spinach, 1 egg. butter. flour, salt, and potatoes.

Stew the spinach in a little butter until tender, then chop finely. Grate the potatoes and mix 3 tablespoons of the spinach with the potatoes, an egg, a little butter, and enough flour to bind, with salt to taste. Form into dumplings, and boil in salted water for 20 minutes.

**SARDINE AND CHEESE FRITTERS.**

Sift 1 large cup flour, 1 teaspoon baking powder, 1 teaspoon icing sugar, good pinch salt, a pinch of cayenne. Add 1 cup grated cheese, and mix to a soft consistency with 1 well-beaten egg and a little milk. Take a little of the mixture in a tablespoon, place a sardine in the centre, cover with more of the mixture. and roll in crushed cornflakes. Drop into a pan of boiling fat, and brown nicely all over. Drain on white paper, and serve hot with chip potatoes.

**PARKINS.**

½lb. oatmeal, 1 egg, ½lb. flour, between ¼ and ½ lb. sugar, ¼ lb. good beef dripping, ½ breakfast cup golden syrup, 3 level teaspoons bicarbonate of soda, 2 teaspoons ground ginger, 2 teaspoons cinnamon, 1 teaspoon spice.

Mix dry ingredients, rub in butter, add beaten eggs, then golden syrup. Roll into balls, and place on buttered tray. Bake dark brown in moderate oven.

**TOAD IN A HOLE.**

1lb. cold sausages, cut up, ¾ pint condensed milk, ¼ teaspoon baking powder, 4oz. flour, 1 or 2 eggs, pepper and salt.

Arrange the sausages in a piedish, make a batter with the flour, milk, eggs, baking powder, and seasoning. Pour over sausages. Put some pieces of dripping on top, and bake about 1 hour in moderate oven.

**DEVILLED MEAT.**

Cut some cold meat in thin slices, and place in a fireproof dish. Cover with brown sauce, made with fried onions, flour, stock, and seasonings, adding 2 tablespoons of chutney. Simmer the sauce for 10 minutes before pouring over the meat. Cover with breadcrumbs, and bake for 15 minutes.

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The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.



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**SYRUP SPONGE.**

½lb. flour, ¼lb. suet, ½ teaspoonful bicarbonate of soda, 2 teaspoonfuls ground ginger, 1 gill milk, 1 egg, 1 tablespoon brown sugar, 1 gill golden syrup.

Sift the flour, soda, and ginger into a basin, add the finely-chopped suet and sugar. Beat the egg, and add to it the melted syrup and milk, then stir this into the dry ingredients. Steam in a greased basin for 2 hours. Serve on a hot dish, with heated golden syrup.

**PEACH PUDDING.**

1 tablespoonful butter, 2 tablespoonfuls sugar, 2 eggs, 1 cup milk. pinch of salt, 2½ cupfuls flour, 1½ teaspoons baking powder, 1 cupful dried peaches.

Cream butter and sugar, add well-beaten eggs, then milk, and then the sifted salt, flour, and baking powder. Beat well, then stir in the peaches, which have been soaked, skinned, and cut into small pieces. Turn into a well-buttered basin, and steam for 2 hours.

**ECCLES CAKES.**

Melt 1 oz. butter in a saucepan, stir in 2 oz. brown sugar, 1 oz. candied peel in small pieces, 4 oz. currants, ½ teaspoon cinnamon, and a little nutmeg. Do not cook, but let butter and sugar melt. Make flaky pastry. Roll out thinly, cut into rounds, put a little of the mixture on each, wet edges, and pinch them together to form a ball. Turn over and roll round until the currants show through. Mark the top, sprinkle with egg and sugar, and bake.


Printed by Blundell Bros., Limited (The Evening Post), Wellington.—6487.

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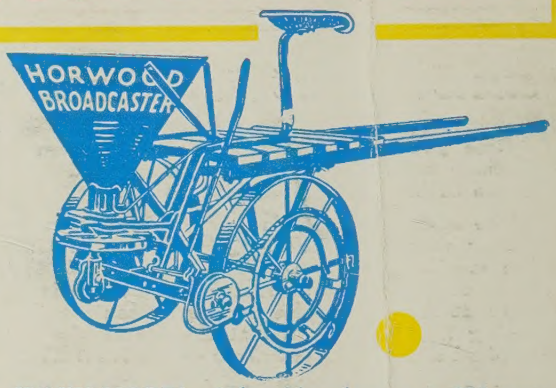


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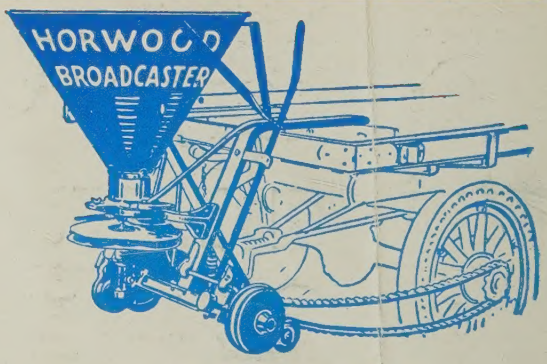


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